ROCKS and MINERALS

Vol. 2 JUNE, 1927 No. 2

CONTENTS

Editorial 41-42
Some old Mineral Localities 43-45
Mineral Collecting as a Diversion 45
Identification of Minerals 46-47
Converging Trails 47
Notes on the Arrangement of Small or Moderate Size Mineral Collections 48-49
Mineral Localities of Maine 49
Mineral Names 50-51
The Voice of the Stones 51
Drifting Continents 52
Gypsum or Selenite 53
The Gem Department 54-56
Acknowledgments 56
Inquiry Department 57
Glossary Department 57
Identification Department 58
Paleontology Department 58-60
Department of Archaeology 60-61
Notes and News of Minerals of the Rarer Elements 62-64
The Prospector's Department 65-67
Localities Department 67
The Beginner's Cabinet 68-73
The Sluice Box 73
Publications Recently Received 74

Published by

PETER ZODAC

157 Wells Street Peekskill, N. Y., U. S. A.

Published Quarterly

Single Copies, 30c. Subscription: U. S., $1.00; Foreign, $1.25.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of Rocks and Minerals published Quarterly
(Insert title of publication.) (State frequency of issue.)

at Peekskill, New York. for April 1
(Name of post office and State where publication is entered.) (State whether for April 1 or October 1.)

State of New York
County of Westchester } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Peter Zodac, who, having been duly sworn according to law, deposes and says that he is the Editor and Publisher of the Rocks and Minerals
(State whether editor, publisher, business manager, or owner.) (Insert title of publication.)
and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

	Name of—	Post office address—
Publisher	Peter Zodac	Peekskill, New York
Editor	Peter Zodac	Peekskill, New York
Managing Editor	Peter Zodac	Peekskill, New York
Business Manager	Peter Zodac	Peekskill, New York

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Peter Zodac	Peekskill, New York

3. That the known bondholders, mortgagees, and other security holders, owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None	

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is... _____
(This information is required from daily publications only.)

Peter Zodac
(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 14th day of April 1917.

[SEAL]

(My commission expires March 30 1919)

Notary Public.

Form 3526.—St. 1918.

Note.—This statement must be made in duplicate and both copies delivered by the publisher to the postmaster, who shall send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office. The publication named in this statement is not entitled to the second class privileges until after the filing.

PENALTY FOR FAILURE TO SEND COPY. SEE SECTION 3930, REVISED STATUTES.

PENALTY FOR REFUSAL TO GIVE INFORMATION OR FURNISHING FALSE INFORMATION. SEE SECTIONS 3926, 3927, REVISED STATUTES.

PENALTY FOR FAILURE TO PUBLISH STATEMENT. SEE SECTION 3929, REVISED STATUTES.

PENALTY FOR FAILURE TO FILE STATEMENT. SEE SECTION 3930, REVISED STATUTES.

PENALTY FOR FAILURE TO SEND COPY. SEE SECTION 3930, REVISED STATUTES.

PENALTY FOR REFUSAL TO GIVE INFORMATION OR FURNISHING FALSE INFORMATION. SEE SECTIONS 3926, 3927, REVISED STATUTES.

PENALTY FOR FAILURE TO PUBLISH STATEMENT. SEE SECTION 3929, REVISED STATUTES.

PENALTY FOR FAILURE TO FILE STATEMENT. SEE SECTION 3930, REVISED STATUTES.

ROCKS AND MINERALS

Published quarterly and devoted chiefly to rocks, minerals, ores, crystals, gems, fossils, etc., in the interest of the General Collecting Public.

Published by

Peter Zodac

157 WELLS STREET **PEEKSKILL, N. Y., U. S. A.**

Vol. 2 JUNE, 1927 No. 2

Subscription Rates: U. S. and Possessions, $1.00 per year; Foreign, $1.25

ADVERTISING RATES

Per Inch	$1.20	Three-Quarter Page	$12.00
Quarter Page	$4.25	Full Page	$15.00
Half Page	$8.00	Inside Cover	$18.00

Classified Ads ..... 2c per word.

Forms close on the 20th of January, April, July and October.

Entered as second-class matter September 13th, 1926, at the Post Office at Peekskill, N. Y., under the Act of March 3rd, 1879.

EDITORIAL

NEW MINERAL CLUB?

Are you interested in organizing a new mineral club?

Mrs. Pearl H. Elliott, one of our most enthusiastic subscribers and contributors, recently wrote us suggesting that we organize a mineral club in which every collector, regardless of where he or she might live, could become a member, using "Rocks and Minerals" as the official organ. Her suggestion took our breath away. But on second thought, why not? It seems to us to be an excellent idea and quite feasible. True we have an excellent organization in the Mineralogical Society of America, but as most of us know, this society apeals more to the advanced collector and specialist. Our new club would be designed to interest beginners and general collectors.

Now, the club to be successful should be such that each and every member could derive some distinct advantages from membership. Some of the advantages that we believe could accrue from this club would be:

Stimulating an interest in and the collection of minerals.

Bringing together collectors in their several localities, making them acquainted and feeling that they have a common interest.

An oportunity for making exchanges with collectors in other localities through a roster of members to be published annually.

A listing in the roster of minerals found in a member's locality, thus acquainting members with loca-

tions where certain minerals can be found.

In communities where the membership is sufficiently large, the formation of a branch of the club could be effected for the purposes of study, exchange of minerals, etc.

A pleasant acquaintanceship could be developed with members in other localities, through correspondence.

We shall be pleased to hear from our subscribers regarding the formation of such a club and any suggestions that may be made will receive careful consideration. We will hope to discuss the matter further in our next issue.

We very much regret that certain contributions—"The Voice of the Stones"—by Miss Elizabeth V. Browne; "Converging Trails," by George Deitz; "Gem," "Prospectors," and "Archaeology Departments," by B. F. Seagle, Jr., intended for our last issue thru a misunderstanding on the part of the printers of the magazine, were omitted. They appear in this issue. We hope that hereafter when proofs have been submitted to the authors of articles for "Rocks and Minerals" and have been corrected and returned they will find their proper place in the issue for which they were written. Three of these articles were intended for departments which we were featuring and their omission was more of a disappointment to the Editor positively, than to Mr. Seagle.

Benjamin T. Diamond, Editor of the Paleontology Department, was graduated in February from City College of New York with the degree of B.S. We extend to Mr. Diamond our most sincere congratulations. Mr. Diamond at present is taking a post-graduate course at Columbia University, majoring in Paleontology.

We are sure that in extending to Mr. Diamond our congratulations we are simply expressing the sentiments of all subscribers who are enjoying Mr. Diamond's excellent department.

We will greatly appreciate it if our contributors and advertisers will co-operate with us by sending in the articles or advertising copy on time, that is, if they wish such articles or advertisements to appear in the next issue of "Rocks and Minerals." Forms for the September issue will close July 20th, so as to give us time to plan and arrange the September number and have the forms in the hands of the printer by August 1st. Only in this way can the magazine be issued on time.

Articles or copy for advertisements received after July 20th will have to be held over for the December issue. It is necessary that we should adopt these regulations to insure each issue being out on time, without the confusion and delays that have been experienced in the past.

We have called attention to the date of the closing of the forms in each issue. This has been printed under the advertising rates on the first page, but possibly it has been overlooked by some of our subscribers and advertisers.

Attention is called to the article on Gypsum by Prof. George A. Olson, of the Gypsum Industries, which appears in this issue. Not only is this an interesting article but an educational one as well. Furthermore, the Gypsum Industries are establishing a precedent in which free samples of gypsum will be sent to all who care to write for one. Be sure you mention "Rocks and Minerals" if you write in.

We are very desirous of adding three new features to the magazine, one, to be devoted exclusively to geology; another, to crystals and elementary crystallography; and the third, to the cutting and polishing of minerals. There is such a keen demand for information on cutting and polishing minerals that we believe a department devoted to this subject will prove very popular. Any subscribers who feel they are competent to take charge of one or more of these departments, who know they have the time to do so and would like to have the experience, are requested to write to the Editor of "Rocks and Minerals," advising him as to their plan and idea as to how they would conduct the departments selected by them. The one submitting the best plan, in the opinion of the Editor, will be chosen to take charge of the department selected.

SOME OLD MINERAL LOCALITIES

By C. W. Hoadley

The interest in mineralogy is so varied that hardly two collectors, whom we meet today, collect minerals with the same object in view.

The people who collect stamps, coins, arrowheads, antique furniture, old china, etc., are influenced by their beauty or their historic value.

Mineralogists, or rather, I might say, mineral collectors (there is a difference), are apt to forget what I might designate as the historical value of specimens. Occasionally an opportunity comes to us to acquire a specimen out of an old collection from some locality which produced remarkably beautiful specimens. Maybe the label bears the name of Oren Root, Clarence Bement, Spang, or even John Ruskin. These labels tell their silent story which should be respected by the collector of today and preserved.

We have lost the opportunity to collect minerals from most of the famous mineral localities which our fathers found rich in rare and beautiful specimens—Mount Mica, at Paris, Maine; the localities in St. Lawrence and Jefferson Counties, New York; the old English localities in Cornwall and Cumberland; and a score of other mines are abandoned and are now a matter of history. In order to collect fine specimens today it is necessary to discover new localities, although once in a while, by good fortune and persistence, a fine specimen is procured in an abandoned quarry or mine.

Unfortunately a number of these old localities have been entirely lost or forgotten, as for example the spot where Danburite was found in the village of Danbury, Connecticut, and described by Shepard in the American Journal of Science in 1839. Over a year ago the writer determined to rediscover this locality if possible. The one clue he had was furnished by the description in the American Journal of Science, which mentioned that Danburite was found near "Mr. White's Manufactury in the Village of Danbury," and further information was obtained from an ancient history of Danbury in the possession of Mr. W. J. Elwell, which gave the location of Mr. White's factory as being on the side of a small stream.

The site of the original mill was visited, in the company of Mr. Elwell, where we found what is locally known as "the old silver mine," now filled in and overgrown with weeds and brush. From the material found near the old shaft, the rock did not look at all promising, consisting of gneiss with considerable graphite and pyrrhotite. A more recent visit, however, was made to the locality in company with Dr. Schairer of Yale University, and Mr. W. J. Elwell of Danbury. On this occasion our efforts were crowned with success, for we discovered *Oligoclase* in beautiful cleavable masses, which is the mineral associated with Danburite. Four or five specimens were collected showing distinct crystals. Credit should be extended to Dr. Schairer and Mr. Elwell for the rediscovery of this lost locality.

A number of other interesting localities were visited in the vicinity of Danbury, including the ancient, abandoned "Lane's mine" in the township of Monroe; Booth's bismuth mine in Monroe, and the Lane tungsten mine in Trumbull, which has been described by many writers. This mine produced at one time a long list of species which are mentioned in Dana's System of Mineralogy, including Scheelite and Wolframite (pseudomorph after Scheelite).

Extending from Redding, Connecticut, in a belt almost due north, are a series of dolomitic crystalline limestone beds. This limestone extends well up into Vermont, which has been famous for its marble industries for almost 100 years; but only in the southern part of this extensive marble belt are minerals found; in the vicinity of Canaan, Brookfield, and Danbury, Connecticut. About one mile south of Brookfield is the site of what was probably the oldest zinc mine in the country which, according to the records, was in operation before the American Revolution. It is reasonable to expect that this mine produced metals used by the Continental Army during the war against England, as

Sphalerite and Galena were at one time mined in this historic spot. Calamine and Greenockite are here reported, but only Sphalerite and Galena were found on the occasion of my visit.

There is a singularly interesting historical spot, a few miles north of Hartford, in East Granby, which was once the most terrible of modern prisons, between the years 1775 and 1783. This was the National prison of the Continental Government, and from 1790 to 1827 it was the state prison of Connecticut. The ruins of the old buildings, which included the former work-shop, hospital, chapel and guard-house, are interesting to the Archeaologist, but more interesting to the Mineralogist are the dungeons themselves, 100 feet below the ground. These dungeons were originally a copper mine, where Chalcocite and other copper minerals were mined from 1705 till 1775. According to records this vein of copper has produced thousands of tons of ore and, according to an assay made by Professor Silliman of Yale College, it was found to yield as high as 15% pure copper. It is not necessary to give the complete history of the mining operations, which hollowed out the dungeons of Newgate Prison, except to say that after having been worked for 70 years by free labor, and slave labor, the enterprise was abandoned after a number of companies became bankrupt; and many prosperous farmers reduced to poverty. In 1773 Connecticut required greater accommodations than it then possessed. In this dilemma certain "Wise-acres" suggested employing these copper mines at East Granby as a prison, a suggestion received with great favor by the people, and adopted by the legislature in this same year. This body passed an act directing that male prisoners, not under sentence for capital crimes, should be imprisoned in the mines, and appropriated a small sum for its purchase and maintenance.*

In Orange County, New York, there are about 30 iron mines, all but one of these have been abandoned. The old mine, known as the Forest O'Dean Mine, is the only one in operation at the present time. It lies about 5 miles west of Fort Montgomery and is about 16 miles to the northeast of Sterling Lake.

While on the subject of Historic Mines, the Sterling group, near Tuxedo Park, should be mentioned, as these mines produced the ore which was used in manufacturing the great chain which stretched across the Hudson River, near West Point, to block the channel against the British Ships of War during the War of the American Revolution. At these mines is the ruin of the original Sterling furnace which has a memorial tablet erected by the Daughters of the American Revolution of the State of New York. This tablet bears the following inscription: "This tablet was erected by the Daughters of the American Revolution, State of New York, June 23rd, 1906, to commemorate the ruins of Sterling Furnace, which was built on this spot in 1751; this furnace is believed to have been the first place in the State of New York in which iron and steel were manufactured in quantity. From the iron here produced was manufactured in 1778, by Peter Townsend, the great chain put across the Hudson River, near West Point, to impede the progress of the British Warships up the river; and the first anchor made in New York State was here manufactured in 1773."

A few of the other interesting mines in this vicinity are the O'Neill and Forshee mines, where beautiful magnetite crystals may be found.

One other historic locality should be mentioned—the ancient copper mines north of Arlington, N. J. (a suburb of Newark), at one time owned by the Schuyler family and called the "Schuyler mine." This mine is located in the Newark Triassic Sandstone and was the source of great wealth to the original owners and has been credited as being one of the oldest copper mines in the country, although our Philadelphia friends may not agree with this statement. The fact remains that about 1719 it was discovered by Arent Schuyler. The ore was first sent to England and, according to "Gordon's Gazetteer," "from the books of the discoverer it appears that before the year 1731, 1386 tons had been shipped to the Bristol copper and brass works in England." The writer visited this mine during March, 1927, in company with Dr. Hawkins of Rutgers College, and secured good specimens of Chalcocite, Malachite, and Azurite. Native copper has been found here in large masses.

The writer has merely touched on some of the many historical localities in

*"In old Connecticut."—Chas B. Tott.

a few of the original 13 states, but Pennsylvania is rich in famous mineral localities, such as the Wheatly mines, at Phoenixville, the mines of French Creek, at St. Peter's; the Amethyst, Beryl, and Garnet localities of Delaware County. The French Creek locality has been and, is today, a "Happy Hunting Ground" for the mineral collector, and is in active operation at the present time. Almost every prominent collection contains beautiful specimens of modified Pyrite crystals, Magnetite and Apophyllite, which came from these mines.

MINERAL COLLECTING AS A DIVERSION

By Rev. R. A. Karpinsky

We are living in an age of keen competition. The highest degree of thoroughness and proficiency is demanded in every vocation. Only he who is able and willing to render the service demanded can hope to retain his position and make progress, while he who fails to come up to the standard, sooner or later finds himself without a position. The mental as well as the physical power is constantly taxed to the utmost. As a result the strength and energy of many is exhausted before they have reached even middle-age. Often such conditions can be avoided, or remedied when they appear, by giving proper care to body and mind.

Aside from one's definite, chosen vocation, every person should have one or more well chosen avocations—or hobbies, if you wish. Such pastimes as collecting minerals, fossils, stones, birds, butterflies, or stamps, or even toying with a radio, will divert the attention from regular work for a short time, and at the same time afford pleasant diversion, broaden the vision and become a valuable asset in one's general education.

Your friends may have a hobby that seems queer to you. But there is no excuse for deriding the hobby of some one else while riding your own. Rather than ridicule the seemingly queer hobby of someone else, pity the one who has no hobby at all.

Some avocation is essential. Hobbies dispel monotony and tedium. They afford a sort of relaxation, a change from the fatiguing tasks of one's daily work. When the mind is fatigued and the nerves are jaded from intense application to laborious tasks, one can gain rest and composure, and yet keep the mind active, by turning the attention to a pleasing hobby, as, for instance, collecting minerals. As Roosevelt says, "A change of work amounts to a vacation."

Comparisons are odious. But should one be inclined to make a comparison, the hobby of collecting minerals will well stand the comparison. The hobbies of collecting fossils, rocks, shells, stamps, etc., are very pleasant pastimes. But none afford such pleasant diversion, none so broaden the vision, none prove so educating as does the hobby of collecting minerals.

In collecting minerals there are so many things which will interest you, which will divert your attention from your regular daily work for a short time, thus actually giving you an education, and at the same time broadening your knowledge. And your interest in minerals will grow as your collection grows. The wide range of colors displayed in a mineral collection will fascinate your attention. The cleavage and fracture of minerals will immensely interest you, and you will marvel at the various crystal forms. The many degrees of luster and great diversity of structure in minerals, their specific gravity, their taste, feel and odor, their tenacity, their behavior in heat and acids and under electricity, their magnetic properties, their appearance under the magnifying lens, their chemical composition, their value, their use, the fact whether they are common or rare, and many other things will afford you an ever interesting and instructive diversion. Try it and be convinced. Begin at once. After once having started collecting minerals, you will only regret not having done so sooner.

IDENTIFICATION OF MINERALS

Free use has been made of standard books on Mineralogy as Dana's, Butler's, Brush-Penfield's, etc.

Part 4.

First Principles of Chemistry—Cont'd

Abundance of the Elements.—Though there are about 90 elements known in the world, only a few are common, while many are very rare. F. W. Clarke of the U. S. Geological Survey has made an estimate of their abundance (see table below). The solid crust is assumed to make up 93% of the earth; the ocean, about 7%; and the atmosphere, 0.03%.

Element	Per Cent. of Solid Crust	Per Cent. of Ocean	Average, incl. Atmosphere
Oxygen	47.33	85.78	50.02
Silicon	27.74	.....	25.80
Aluminum	7.85	.....	7.30
Iron	4.50	.....	4.18
Calcium	3.47	0.05	3.22
Magnesium	2.24	0.14	2.08
Sodium	2.46	1.14	2.36
Potassium	2.46	0.04	2.28
Hydrogen	0.22	10.67	0.95
Titanium	0.46	.....	0.43
Carbon	0.19	0.002	0.18
Chlorine	0.06	2.07	0.20
Bromine	.....	0.008	.....
Phosphorous	0.12	.....	0.11
Sulphur	0.12	0.09	0.11
Barium	0.08	.....	0.08
Manganese	0.08	.....	0.08
Strontium	0.02	.....	0.02
Nitrogen	.....	.....	0.03
Fluorine	0.10	.....	0.10
All other elements	0.50	.....	0.47
	100.00	100.00	100.00

Mixtures and Compounds.—We have stated in our previous lesson that compounds were substances consisting of more than one element, but *the elements cannot be distinguished from one another.* On the other hand a mixture is also a combination of 2 or more elements or compounds, but *each element or compound can be distinguished from another.* An example will show this more clearly. Water is a compound consisting of 2 elements, Hydrogen and Oxygen, both gases. In uniting to form water these 2 elements have lost their individual characteristics and formed an entirely new substance.

Granite, a rock, is a *mixture of minerals,* generally 3—a glassy quartz; black or white mica, and red, pink or white feldspar. Sometimes in place of mica a black and hard mineral, hornblende, is present. In granite, the various minerals, each a compound, can easily be recognized from one another. In the Lake Superior Copper mines, copper and silver, each an element, are commonly found as mixtures.

Indestructibility of an Element.—Although chemical action, such as combination, can certainly produce marvelous changes, there is one thing that cannot be accomplished: it can neither create nor destroy an element. By the most careful examinations and tests of chemical action, it has been proved that a loss of an element *never* occurs, that an element is *indestructible.* Though wood or paper may burn up, water evaporate, etc., it does not signify that the elements composing these substances are annihilated but simply that they change into another state which the naked eye often cannot perceive. Wood or paper in burning change into another form—smoke—a dark, choking gas. If we were to take a stick of wood, weigh it carefully, then burn it up in such a manner that all the smoke given off could be collected and weighed, we would find in the end that the weight of the smoke, plus the weight of the ashes remaining, would *exactly* equal the weight of the original stick.

As we cannot destroy an element in like manner we cannot create one. Elements that are being discovered, from time to time, are found generally as combinations in other substances. By removing all elements that are known leaves the unknown element in its pure state. Each element has a name, generally given to it by the discoverer, in allusion to its origin, association or some striking property. For instance, Chlorine, a yellowish-green gas, obtained its name from the Greek name for pale green color.

How Compounds are Named.—Most of the compounds have two or three ele-

ments. We call those having only two *binary* compounds; those having three, *ternary* compounds. The name of a binary compound contains the names of both its elements, but the last syllable of one of them is changed to *ide*. Most binary compounds contain a *metal* and a *non-metal*, and it is the ending of the *non-metal* that is changed to *ide*. Thus, Sodium Chloride is a compound of Sodium, a metal, with Chlorine, a gas; Magnesium Oxide, one of Magnesium and Oxygen (here the y before the ide is omitted); Copper Sulphide, one of Copper and Sulphur. Hydrogen is usually considered a metal, when used with a non-metal, as in Hydrogen Sulphide. Its compounds with metals are called hydrides, as Potassium Hydride.

If there are *two* compounds of the same two elements we distinguish between them as follows:

(1) We change the final syllable of the name of the *first* element to *ous* or *ic*; or

(2) We place a prefix, usually a numeral or *per*, before the name of the *second* element.

The ending *ic* is given to the first element in the case of a compound having the *larger* proportion of the *second* element. The ending *ous* is given the compound having the *smaller* proportion of the second element. Thus, the two chlorides of mercury, HgC12 and HgCl, are called Mercu*ric* Chloride and Mercu*rous* Chloride, respectively.

The second method is to use a numeral prefix as Carbon *Mon*oxide and Carbon *Di*oxide for the substances CO and CO2 respectively; or the prefix *per* or *tri*, as Hydrogen *Per*oxide, or Sulphur *Tri*oxide, for H2 O2 and S03, respectively.

CONVERGING TRAILS

Two streams were born in sources wide apart,
From springs that oped from out the living rock,
Where, after Time had pounded at the door,
At last the hand of Nature did unlock.

Down thru its rock-strewn valley wound each stream,
Each foot of way acceding to its growth.

The rain and melting snows from sky and hill,
Seeping thru the mold, rewarded both.

A river formed where God had caused them meet;
A mighty river, their maturity.
And onward thru their lives they lived as one;
And so they reached their Heaven in the sea.

Two babes first saw the world in different climes,
One a little girl, and one a boy.
Each reached maturity as He had willed.
Each life was pure; contained no base alloy.

An accident had caused them both to meet.
Who knows but what our Lord ordained it so.

Two hearts thrilled when a common chord was struck:
Endearing words he whispered soft and low.

He spoke the words as old as Time itself.
Her drooping eyes replied with happy tears.

And so their destinies were blended in.
They lived as one down thru the passing years.

The sun conveyed the river from the sea
Back to the land where budding plants unfurled.

While, e'er they passed into the Great Beyond
The girl and boy did likewise gift the World!

—GEORGE DIETZ.

Notes on the Arrangement of Small or Moderate Size Mineral Collections

By Morrell G. Biernbaum

Many beginners or near-beginners in mineral collecting usually bring up the subject sooner or later as to the best way of arranging their gradually-enlarging collection. To the writer's best knowledge, the only arrangement in print is that in use at all the larger museums, viz. the Dana System, which is, as we all know, an arrangement based on the Chemistry or rather chemical composition of the various species.

The following notes detract in no way from the practicability of the Dana System for a large collection and even for a small one, if this system is particularly desired by the owner of the collection. However, for the average private collection, the following thoughts are submitted for consideration as having some interesting features of their own. The writer has used both of the following schemes with considerable success.

In the first place, the one big fault that can be found in using the Dana System for a small collection is that unless one is pretty thoroly acquainted with Dana's groupings, it is rather difficult to find a particular specimen when one wants it. The Dana System is far more exact than either of the following, but this fact is, in my opinion, more than offset by the general ease of location of the specimens as well as the other features noted below.

The first arrangement suggested is what in fact amounts to a Paragenetic grouping, or one in which minerals which are typical to certain rock-formations are grouped together. This scheme cannot, of necessity be followed exactly, but with the modifications suggested here, can be used to considerable advantage.

For instance, the following groupings, while not all strictly Paragenetic, nevertheless follow fairly well-developed lines along this general line of thought.

1. Zeolites and allied species. (Trap Rock minerals).
   Include all Zeolites, and Prehnite, Datolite and Pectolite.
2. Pegmatite minerals.
   Include Garnets, Tourmalines, Beryl, Turquoise, Amazonstone, Topaz, and other "gem" minerals. Also include Amphiboles, Pyroxenes, Micas, and Feldspars, keeping this latter group separate from the first group for general interest and ease of location.
3. Metallic minerals and Ore minerals.
   This group includes all distinctly metallic minerals as well as metallic Salts which are usually associated with ores and orebodies.
4. Quartz.
5. Calcite and Aragonite.
6. Fluorite, Barite, Celestite, Witherite, and Strontianite.
7. All other miscellaneous minerals.

The second arrangement suggested is, with only two possible exceptions, alphabetical. The possible exceptions noted are Quartz and Calcite, which, containing so much variety of color, may be desired to be placed in a more advantageous location for appearances sake than the normal scheme will allow. The one big advantage of the alphabetical scheme is that of appearance. There is no possible choice between this arrangement and the preceding, each having its own distinct advantages. This scheme will work out far better than the previous one for display purposes, as there is no grouping of colors, all colors being thoroly mixed in this process. Furthermore, each shelf can be labelled, such as "Albite to Chalcocite" and "Chalcopyrite to Datolite", etc., and, while any one shelf would be arranged as best suits the color scheme, any species can be positively located on a certain shelf, and the exact location is comparatively simple. Another big advantage of this scheme over the preceding one is that better distribution per shelf can be obtained. By this arrangement, if one shelf gets overloaded, all that is necessary is to shift the adjacent shelf or shelves until the distribution again balances. By the first scheme, this is not feasible, and there is a constant tendency to overload one shelf to the detriment of the appearance of all the others.

It is suggested that, in either of these schemes, the very large "museum-size" specimens be kept out of the regular shelves, and placed on the bottom shelves, which should be reserved for just such specimens.

Before leaving this subject, there is still a third scheme which deserves mention. It has not been used by the writer, but has been used very successfully over a long period of years by Mr. Charles Hoadley, of Englewood, N. J. This scheme pays no attention to any of the aforementioned ideas or arrangements. The arrangement is entirely by locality, first by Continent, then by Country, then by State or Province, and further subdivided into individual locality. This scheme is admirably suited for a Drawer-cabinet collection, as it is possible to see at a glance and go over thoroly all minerals which have been found at any one locality. This scheme has a fascination of its own, because when one knows that he is missing a certain species or two from some particular locality, it is just as interesting to go "chasing" such specimen or specimens to complete that locality as it is to the average collector to try and complete a collection of all the varieties of a certain species, both eventually attaining practically the same end, but by different methods.

In conclusion, the writer would like to say that he is glad he is an amateur, as no doubt if he were a professional mineralogist, he would be "crippled" professionally for life for having suggested these more or less scientifically preposterous ideas, but being an amateur, he feels that the professional friends may disdain from too much criticism out of pity to a poor ignorant would-be mineralogist.

MINERAL LOCALITIES OF MAINE

By Charles F. Marble

The Peru Mica Mine.

On the steep south slope of a small mountain called Hedgehog Hill, near the central part of the town of Peru, Maine, is a small abandoned mine which was opened up for mica. The deposit is a very coarse-grained pegmatite. Bastin mentions feldspar crystals or masses, three feet across, and biotite crystals or lathes, four or five feet long and two or three inches wide, some of the biotite penetrating muscovite crystals.

The feldspar is orthoclase-microline, or potash feldspar.

There is some quartz of the granular variety which is the usual matrix of beryl. Occasionally, clear smoky quartz with a slight amethystine tinge is found, but they are not good enough to cut as gems (sometimes called manganese quartz.)

Garnets are plentiful, of the so-called iron-garnets. Crystals from ½ inch or less up to 1½ inches in diameter are often found. Many of these have clear, sharp faces and edges, while a few may be gemmy. The color is deep red.

It has been reported that a few pockets were found containing crystals of high colored tourmaline that were rather soft. The chances are that these were not tourmalines but apatites as no indications of colored tourmalines are to be found now; furthermore, the writer has found some small crystals of apatite "frozen" in the pagmatite to support these claims.

The writer knows of at least one crystal of chrysoberyl found here. It was rather shattered, but originally must have been about ½ inch thick and 2 inches in diameter. From this crystal a perfect stone, of about 1 carat, was cut that was very brilliant, the color being greenish straw-yellow. Though careful search has been made time and time again, the results were always disappointing, as no more crystals were to be found.

The beryl-bearing portion of the quartz appears to be about worked out, at present, as beryls are only occasionally found. Nevertheless, some extra-fine stones of aquamarine and golden beryl were cut from gems found here. It is reasonable to suppose that further prospecting may bring to light many more gems of beryl, and perhaps, of Chrysoberyl also.

MINERAL NAMES.

By JAMES H. C. MARTENS,
Cornell University, Ithaca, N. Y.

Most mineral collectors are probably more or less burdened by the lack of system in the names of minerals, and the consequent difficulty in associating with the proper name the appearance and characteristic properties of the mineral itself. Yet it is doubtful if inquiry is often made as to the origin or meaning of the names.

It is surprising how much it helps in connecting up in one's mind the name of the specimen with the mineral itself, to look up the origin and meaning of the name. Dana's "System of Mineralogy" and the other more extensive books on systematic mineralogy tell the origin of the accepted names of the mineral species and also give the synonyms for them, while Chester's "Dictionary of the Names of Minerals" lists not only the names of the accepted mineral species and their derivation, but also includes the names of their different varieties and of many discredited species. This latter feature may often aid in the correct identification of incorrectly labelled specimens, since new names have often been given to things which are only unusual varieties of common minerals or mixtures of them.

We can best illustrate some of the sources of mineral names by examples. Let us take the mica group. The word *mica* itself is from the Latin verb meaning to flash or shine and refers to the lustre and smooth surface of the mineral. It is of very ancient origin. The German name *Glimmer* is a literal translation of it. *Muscovite* is from Moscow, Russia, where this variety of mica was long ago used in windows in place of glass; *Biotite* is from the French scientist Biot; *Phlogopite* is from the Greek and refers to the coppery red color of the mineral.

If we should attempt to classify all of the names of minerals we might include most of them in four general groups.

First would be the very ancient names which were a part of the general language and literature long before there was any science of mineralogy as such and before there was anything like the modern idea of a *mineral species*. These apply either to very common minerals, such as *quartz*, to minerals which were prized especially on account of their beauty, such as *Gold*, *Beryl*, and *Diamond*, and to a few minerals which have long been used as ores or otherwise applied in the arts and sciences.

Then there are the names which are bestowed upon minerals on the basis of some real or supposed property of the mineral or some circumstance connected with its discovery. In this connection the Greek and Latin languages have been used very freely. Examples of such names are *Barite*, from the Greek word meaning heavy; *Azurite*, from the azure-blue color of this mineral; and *Sodalite*, from the large amount of sodium which it contains. *Actinolite*, is from the Greek and describes the occurrence of the mineral in long radiating crystals. Many other examples could be given illustrating names taken from different types of properties.

Some names which might be considered as belonging in this group were given erroneously. *Pyroxene* means literally, "a stranger to fire," implying that this mineral does not occur in volcanic rocks. It is now known that it not only occurs in these rocks but is one of the most common and characteristic minerals of them.

Still a third group of mineral names are those which are geographic, and usually, but not always, indicate the first known occurrence of the mineral. *Warwickite* is from Warwick, Orange County, N. Y.; *Andesine* is from the Andes Mountains; *Aragonite* is from Aragon, Spain; and *Franklinite* from Franklin, N. J. For a mineral with a geographic name not indicating a natural occurrence of the mineral, we may cite *Fayalite*, after the island of Fayal. The material described from there and named Fayalite was later found to have been derived from blocks of slag carried as ballast on a vessel, and it was at another local-

ity that the truly natural Fayalite was first found.

As a fourth and very large class of mineral names we have those of personal origin which have been given in honor either of the discoverer himself, of one of his friends, or of some well known person, usually a scientist. Often a mineralogist will describe a mineral too incompletely to give definite proof that it is new and will forbear to give a name to it and a little later one of his associates will name it after the one who first noticed it, if it really does turn out to be a new mineral. As examples of minerals with personal names we have *Kempite*, after the late Professor J. F. Kemp; *Dolomite* after Dolomieu; and *Wernerite* after the German mineralogist Werner.

Since the beginning of the modern science of mineralogy its followers have been attempting to simplify and systematize nomenclature. J. D. Dana attempted to apply to minerals a natural classification with a division into orders, genera, and species on the basis of external properties, with Latin names similar to those used in botany and zoology. After a time he decided that the relationships between minerals were such as to make a classification of this sort impossible. The chemical composition seems to be a better basis for classification but on account of the complex and imperfectly understood composition of many minerals it is difficult to give names which shall express this at all systematically.

In English speaking countries and generally, though less uniformly in others, mineral names are given the suffix *ite* or *lite* from the Greek word for stone. The few exceptions to this are in the case of common and long known minerals where the addition of this termination would either cause confusion or make a less agreeable sounding word. For example, *Hornblende* could not be replaced by *Hornblendite* because the latter has already been used as a name for a rock.

It is to be hoped that in the future mineralogists will be more careful to prove that they have really found a new mineral before bestowing a new name upon it, and that in the choice of names preference will be given to short ones, easily pronounced and spelled, and not so similar to any other name that confusion is likely to result.

THE VOICE OF THE STONES

I am never lonely
When rocks and stones are near;
Each one conveys to me
A meaning that is clear.
The stone lying in the roadway
Tells its golden story,
Reclining in the dust—
Its lowly bed of glory.
The pebble in the brooklet,
When broken wide apart
May show to me the crystals
Within its shiny heart.
Quartz, Calcite, and the rest
Their beauty will reveal,
And to all those who seek them
Their charms will not conceal.
So I am never lonely,
For each stone has a voice
And speaks to me a message
That makes my heart rejoice

ELIZABETH V. BROWNE.
(13 years old)

A request received not long ago is for an article on the use of a microscope in examining minerals. We would appreciate such an article from any subscriber who has had experience in the use of a microscope.

New subscrbers wishing to obtain back numbers of "Rocks and Minerals" are advised that a limited number are still available at 25c per copy. The numbers are September and December, 1926, and March, 1927.

DRIFTING CONTINENTS

By Benjamin T. Diamond, B.S.

Open an Atlas to a map of the world and examine the continents carefully. Notice the striking resemblance in form between South America and Africa. This was the starting point in the Wegener theory of continental drift. Alfred Wegener, Professor of Oceanography and Meteorology in the University of Graz, after noticing the resemblance in the coast-lines of the two continents, tried to unite them into a single continent by moving Africa over to South America. He was surprised at the apparent fit, and then tried to move the other continents, with an astonishing result. The North West bulk of Africa fitted into the Gulf of Mexico, the West coast of Africa touched the East coast of South America, Ireland came in contact with Newfoundland, France with the Northern part of Africa and Australia was slipped next to the Western coast of India. This led to a natural conclusion: that at some time, long ago, all the continents were united into one large continent which Wegener called "Pangaea".

The rift between the continents was caused by a great catastrophe like the birth of the moon from the earth, which occurred, Wegener believed, in the Cretaceous.

At about the same time F. B. Taylor, an American, came to the same conclusions, and so some times this theory is known as the Wegener-Taylor theory of continental drift.

After the continents were broken up by this great catastrophe, the combined tidal forces of the new born moon and the sun caused the continents to shift until they have reached their present positions.

Professor Wegener in his book brings forth biological, geological, geodetical and paleontological evidences that the continents were once united into a Pangaea and answers the argument that the continents did not fit exactly into one another by saying that in 60 million years the constructive and destructive agents at work would so alter a coast-line that a perfect fit would be impossible.

The late Dr. Pickering of Harvard agreed with the Wegener theory, claiming, however, that the continents were set adrift in the Cambrian. He brings forth this evidence in support of the hypothesis: "if longitudinal observations made in Greenland in 1870 and 1907 are both correct that island has shifted westward some 4,000 feet."

This is just a presentation of the theory without defending or attacking it. However, I feel I must point out where Dr. Pickering made wrong inductions from the observations.

It is true that Greenland is farther from the mainland now than it was in 1870, but the answer is not that it has moved westward. The Eastern coast of Greenland has sunk while the Western coast came up, giving the appearance that the Island has moved outward.

Scientists armed with clocks and telescopes, radio-apparatus and chronometers were checking up the theory that the American continents are drifting westwards.

During the month of February, through an international arrangement, fifty stations in thirty countries were united by astronomical observations coupled with radio time signals.

The relative longitude of these stations having been determined, it will be possible by a repetition of the observations at some future date definitely to settle the question of continental drift.

* * *

A geologist contends that some of the continents are drifting. Well, it must be admitted that Europe is continually trying to touch America . . .

GYPSUM OR SELENITE

By Professor George A. Olson
c/o The Gypsum Industries.

One of the non-metallic minerals which should prove of much interest to collectors of rocks and minerals is gypsum or selenite, which is known chemically as calcium sulphate combined with two molecules of water. Forty centuries ago it was used in building of the pyramids of Egypt and at the present time about 6,000,000 tons are used annually in the United States in art, industry and agriculture.

Sculptors and artisans use preparations of gypsum in the making of casts, decorative mouldings and friezes. The bulk of the gypsum, however, is used as plaster, plaster board, wall board, partition tile, floors and roofs, Keene's cement, plaster of paris, in Portland cement and agriculture.

Gypsum is especially serviceable as a wall material. Being a good non-conductor of heat and cold it offers protection against weather changes. Gypsum insulation is quickly coming into use as it is a very satisfactory way of keeping homes and other buildings cool in summer and warm in winter. The use of gypsum in construction is in fact a provision which adds to home comfort. Furthermore, gypsum walls, floors and ceilings possess fire resistive properties which reduce the risks caused by conflagration.

In addition to the above uses for gypsum, it has been found valuable as plant food material and for various other purposes on the farm. The gypsum unlocks elements in the soil and makes them available as plant food. In soils where sulphate sulphur is a limiting factor applications of agricultural gypsum have frequently enhanced the yields of alfalfa and other crops.

Then, too, the gypsum is used to open heavy soils and bind together light sandy ones. This practice makes the land better suitable for the growing of crops. Gypsum applied on floors, in barns and on dropping boards in poultry houses checks odor, solves the fly nuisance and in general improves the sanitary conditions which are essential in providing comfort for the stock and flocks. In this use ammonia nitrogen, the most expensive of plant foods, is trapped and saved as a fertilizer material without in any way interfering with the value of the argicultural gypsum as a source of plant food.

Even in the control of insects gypsum has come into use. It does not injure foliage and for this reason serves as an excellent carrier of various poisons which are employed to check the ravages of insects. These combinations of gypsum and poison are finding favor among farmers because in the form of dust they are effective and easily applied.

The various uses for gypsum which have been mentioned undoubtedly will be of interest to collectors of rocks and minerals and if there is not already a sample in their collections it will perhaps be well to get one. The Gypsum Industries will be pleased to furnish sample pieces of rock to all who apply, mentioning "Rocks and Minerals." Address as follows: The Gypsum Industries, 844 Rush Street, Chicago, Ill.

Mrs. Pearl H. Elliott, one of our most enthusiastic subscribers, sailed on April 21st, on the S. S. Manchuria, for California, where she will make her future home. She went by way of the Panama Canal. We extend to Mrs. Elliott our best wishes for a very happy life in that State of sunshine, fruits, flowers and minerals.

Mrs. Elliott has the distinction of being the longest paid-up subscriber to "Rocks and Minerals." Her subscription expires with the June issue in 1934.

Mrs. Elliott is the one who suggested that we form the mineral club, mentioned elsewhere in the magazne.

THE GEM DEPARTMENT

Conducted by
B. F. SEAGLE, JR.,
Associate Editor

THE DIAMOND

The diamond is a precious stone or gem excelling in brilliancy and beautiful play of prismatic colors, and remarkable for extreme hardness. It is found in many hues—green, rose, straw, yellow, etc.; but the straw-colored ones are the most common. The diamond is a native carbon occurring in isometric crystals, often octahedrons, with rounded edges. It is the hardest substance known. Diamonds are said to be of the FIRST water when very transparent, and of the SECOND and THIRD water as the transparency decreases.

The search for diamonds is filled with thrills. And the lure of sudden wealth results in "rush" when precious stones are found in any part of the country. Just a short time ago a famous diamond expert received a caller who exhibited a small, odd-shaped object which seemed to half hide a gleam and a glitter.

"Where did you get it?" the visitor was asked.

"Well, I'm a merchant, and a woman brought it in to me. She found it in the crop of a chicken. What is it?"

"Diamond".

Although that part of the country from which the chicken came never yielded another specimen of pure carbon, the fever spread all over the country.

Diamond hunting contains the greatest amount of adventure and pure luck of any known outdoor occupation. A diamond may be picked up by anyone, in practically any state in the union, and then, no one else may find a real gem in that locality again for years.

The South African diamond-fields yield about 98 per cent. of the total product. Their discovery in 1867 came from the purchase of a stone that had been picked up by the children of a Boer farmer, and which was subsequently sold in Paris for $2,500. The diamonds are found in both river diggings and dry diggings. River diggings occur along the Vaal River from Potchefstroom down to the confluence with the Orange, and up the latter river as far as Hopetown.

Mining is conducted in a similar manner to gold-washing, the operations usually being on a limited scale. The dry diggings are in Griqualand West, on the borders of the Orange River Colony, about 640 miles north-east of Cape Town. They comprise a number of small areas of circular or oval form, ranging in diameter up to one-fourth of a mile. They are worked by a single company, the De Beers Consolidated Mines, Limited. The mines are opened on a large scale, and yield enormous profits. It is stated that the output from 1867 to 1897 was over 33,000,000 carats, or about 7½ tons, valued after cutting at $450,000,000.

Quite recently another diamond field has been opened in Transvaal, near Pretoria. The largest mine is the Premier, which has been proven to be very rich. The South African diamond on the average does not equal the Brazilian for purity, although some of the most valuable stones, remarkable for quality as well as for size, have been found in these mines.

Other countries where diamonds are known to occur are United States, British Guiana, Russia, China, Sumatra and Australia. In the United States there are no deposits, so far as discovered, of sufficient value to warrant mining operations, the stones being found only occasionally in alluvial materials and drift. More than fifty specimens have been identified, of which the largest, weighing nearly 24 carats, was found at Manchester, Va., in 1855. Their occurrence is generally confined to the regions of the southern Appalachians, the Great Lakes, and to the Coast and Sierra Nevada ranges of California and Oregon.

The diamond fields of British Guiana are about 250 miles up the Mazaruni River, and, while new, they give some promise of future importance. New South Wales produces about 25,000 carats annually from alluvial washings near Mudgee, and on the Macquarie River. In Russia diamonds occur on the

western slopes of the Urals, and are obtained in the washing of sands and gravel for gold.

The real romance of stone-cutting is found in the story of the diamond. When an uncut, or rough, diamond comes to the cutter's bench, the gamble begins. How profitable his investment is depends upon his buyer's ability to judge the type of stone. What results from a rough diamond rests on how it breaks, how nearly flawless it is, whether it is "knotty", and what percentage of it must be wasted.

In cutting, the average diamond loses 42 per cent of its weight. When it loses more than 45 per cent the cutter's worries begin. Sometimes it will cut down to a third, or even a fourth. Add to this the fact that it takes as long as two months to split, shape, saw and grind or polish the 58 facets of a "knotty" stone, and an idea of the cost of whittling these precious bits of carbon is obtained.

Diamonds are found free or in matrix —and when in matrix are often combined with gold or iron. It is not at all unusual to see a matrix containing one or two diamonds and a couple of gold nuggets. Free diamonds, like gold nuggets, are found in "bearing" streams.

When the rough diamond comes to the cutting bench an expert there studies it to learn whether it is "two point" or "three point"; that is, to determine how it can best be cut. He searches for flaws and for the grain. Then he splits it to free the portion he wants. Next it is shaped. A gem is put into a lathe and another uncut stone is applied to it the same as a tool is put against something it is to shape, and rotated at great speed.

Then comes the sawing between thin disks of copper revolving at high speed. With soft stones, a diamond of, say a carat, can be sawed in from eight to twelve hours. But if that diamond contains a "knot", which is much the same formation as a knot in wood, the sawing may take weeks. After the sawing comes the "polishing", or the putting on of the facets. The diamonds are fastened in a socket of tin and ground against revolving disks saturated with a solution of olive oil and diamond dust. This may take 40 hours, and when knots abound it might require 40 days. A large cutting establishment had a seven-carat Brazilian stone so hard that, after eight months of cutting and grinding, they were compelled to admit that it was too hard a nut for them to crack. It is still uncut.

And that's the reason why diamond hunting and diamond-cutting are rich in the element of chance—and why the industry is one big gamble.

So if you have a polished diamond, the finished product of the jeweler's art, you can consider it a good investment, as the value never falls, but pays almost six per cent interest on the investment in an exchange for another stone. Therefore, owning a diamond is like having money in the bank.

DIAMONDS OF NOTE

Carats (Uncut)	Carats (Cut)	Name	Discovered	Possessor
3,025¾	516½	Cullinan I	1905	King George V.
	309¾	Cullinan II	1905	
1,680(?)	Never cut	Braganza	1741	Among Portuguese Royal Jewels.
787½	367 9/10	Rajah of Mattan	1756	Rajah of Mattan (Borneo).
.....	194¾	Orloff	.....	Czar of Russia (scepter).
.....	139½	Florentine	.....	Emperor of Austria.
242½	.....	Tavernier	1668	Stolen in 1792.
150	138½	.....	1775	Among Portuguese Royal Jewels.
410	136⅜	Pitt or Regent	1702	King of Prussia.
254	127	Star of the South	1853	Gaekwar of Baroda, India.
186½	106 1/10	Koh-i-nur	B.C. 56	Royal Family of England.
.....	86	Shah	.....	Czar of Russia.
89¾	78⅝	Nassac	.....	Lord (Marquis of) Westminster.
288⅝	.....	LIGHT YELLOW	.....	Stewart (diamond).
150	.....	Porter Rhodes	1872	FOUND IN SOUTH AFRICA.
112	67⅛	BLUE	.....	
83	52½	Sancy	15th Cent.	Czar of Russia.
.....	49	Pigott	.....	Bought by Messrs. Rundell & Bridge.
83½	46½	Star of So. Africa	1867	
88½	44½	Dudley	.....	Earl of Dudley.
.....	49½	Hope	.....	Mr. Henry Hope's Family.
.....	40	Pasha of Egypt	.....	Khedive of Egypt.
.....	28	Charles the Bold	.....	

Precious stones are those which, because of their beauty, hardness and rarity, are prized for use in ornamentation, especially in jewelry. The diamond, ruby, sapphire and emerald are the only stones which are, strictly speaking, entitled to be called "precious" in this sense; but the opal, on account of its beauty, is often classed with the precious stones, as is also the pearl, which is really not a stone, but a secretion of a shellfish.

Another valuable stone often found in this country is the sapphire. Montana yields these stones regularly, and in many cases a month of sapphire prospecting will produce handsome returns. There are, perhaps, 15 semi-precious stones often located in the United States, foremost of which are the amethyst, agate, topaz, moonstone, opal, cat's-eye, aquamarine (beryl), garnet and petrified wood. Uncut these stones have little value. Cut, four-fifths of their value lies in the work that has become an industry in itself in America.

ACKNOWLEDGMENTS

We wish to acknowledge receipt and to express our sincere thanks for specimens and other donations recently sent us by some of our subscribers.

Mr. Franklin Harter, of Montana, sent us an interesting assortment of copper minerals from his locality.

Mr. L. P. Bottley, of England, sent us two excellent specimens—Camphyllite and Pyromorphite, from Cumberland, England.

Messrs. Frank Cooney and Hubert Stringer, of Alabama, sent us some nice fossils.

Mr. Joseph N. Prokes, of Minnesota, sent us a fine specimen of the rare Calcite-Sand crystals. Also a cut of Calc Tufa that we will use in a future issue.

Miss Daisy Bourne, of Barbadoes, sent us some very choice and beautiful specimens of coral and sea-shells, and a nice specimen of the rare asphaltum mineral—Manjak—which is found only in Barbadoes.

Mr. Ronald Campbell, a prospector in far-away Alaska, sent us two interesting snapshots of Alaskan scenery, one including his cabin. We regret he did not appear in one of the pictures. Perhaps he may send us one of himself later.

Dr. A. deClairmont, of California, sent us a photograph of an interesting mineral display in a store-window of his city. A large poster in the window bears a unique offer—but more of this later as Dr. deClairmont has kindly proposed writing an article in regards to this for the next issue.

The Girl Scouts, Inc., of New York, (Headquarters of the Girl Scout Organization) sent us many interesting pamphlets and a complete file—to date—of their 1927 issues of "The Girl Scout Leader." The "Girl Scout Leader" is the official publication of the organization.

INQUIRY DEPARTMENT

Rocks and Minerals will gladly answer your questions pertaining to to rocks, minerals, ores, mining, geology, and other legitimate queries in its proper field.

"I wish to inquire as to the commercial value of rock crystal since it has been found to be of value in radio communication. If the crystals command any value, where can I find a market for them?" F. D.

Rock crystals, if pure and transparent, are in demand for optical purposes. They are also cut into vases, dishes, and so on. Crystal balls, used by fortune-tellers and others, are also cut from rock crystals and often command a high price, depending upon the size of the ball Sometimes rock crystal is cut into beads and fancy shapes, or fashioned to resemble the diamond, and sold under such names as "Rhinestone," "Herkimer diamond," or "Alaska diamond."

Rock crystal is a variety of quartz, and is among the most abundant of gem minerals, being found in practically every country in the world. Japan and Brazil are especially noted for the large and clear varieties found there. Other localities are Switzerland, France, North Carolina, New York, Arkansas, etc.

The commercial market demands that the crystals be of fairly good size, weighing from ¼ of a pound upward. A. D. Mackay, Suite 1305-26 Cortland St., New York, N. Y., and Foote Mineral Company, 19th and Arch Sts., Philadelphia, Penn., are buyers of rock crystals.

GLOSSARY DEPARTMENT

A list of various mining, mineralogical, and geological terms, with explanation of each one. Free use has been made of various publications on mining, mineralogy, and geology, including bulletins of the U. S. Bureau of Mines and the U. S. Geological Survey. Webster's New International Dictionary has also been consulted.

Agnesite: A name given to Bismutite by Cornish miners.

Agonic line: A line passing thru points on the earth's surface at which the direction of the magnetic needle is truly north and south; a line of no magnetic declination.

Agricolite: An adamantine colorless or yellow bismuth silicate, crystallizing in the monoclinic system.

Agua: Spanish for water.

Aich's metal: See Gun Metal.

Aikinite: A blackish lead-gray sulphide of lead, copper and bismuth.

Ailsyte: A name derived from Ailsa Craig, Scotland, and suggested for a micro-granite containing considerable riebeckite.

Ainalite: Cassiterite that contains tantalum pentoxide.

Air: The mixture of gases that surrounds the earth and forms its atmosphere; composed by volume of 21 parts of oxygen and 78 of nitrogen; by weight 23 parts of oxygen and 77 of nitrogen. It also contains about 0.03% of carbon dioxide, some aqueous vapor and about 1% of argon.

The current of atmospheric air circulating thru and ventilating the workings of a mine, whether by natural or artificial means.

To ventilate any portion of the workings of a mine.

Air adit: An adit driven for the purpose of ventilating a mine.

IDENTIFICATION DEPARTMENT

To this department, subscribers may send in minerals to be identified—free. Give name of locality where found, and if minerals are to be returned, remit enough stamps for postage.

W. H. H., B. C.—The 4 specimens sent in are limestones. The 2 small white ones almost approach a marble in structure and perhaps can be used as such. The prospect should first be examined to determine how much stone there is available, ease with which it can be obtained, and samples tested by some reliable laboratory. The small black specks in the limestone are graphite. The other 2 specimens are impure varieties of limestone and are of no value.

PALEONTOLOGY DEPARTMENT

Conducted by
BENJAMIN T. DIAMOND, B.S.

Mr. Diamond will gladly assist subscribers in identifying their fossil specimens or answering any questions pertaining to fossils. Please write to him direct, enclosing enough postage if a personal reply is desired, specimens returned, etc. Address all mail as follows: Benjamin T. Diamond, B.S., 467 Riverdale Ave., Brooklyn, N. Y.

CLASSIFICATION OF FOSSILS

Before taking into consideration the study of fossils, it is necessary to become acquainted with the classifications into which living forms fall. Without going too deeply into biology, I shall give an outline classification of animals, explaining how the classifications are made and what the names mean.

An individual specimen falls under seven groups. Let us take for example an index fossil C o n o c o r y p h e e l e g a n s and classify it.

Kingdom—Animal
Phylum—Arthropoda
Class—Crustacea
Sub. Class A—Trilobita
Order—Opisthoparia
Family—Conocoryphidae
Genus—Conocoryphe
Species—elegans

Let us examine the specimen and see why it has fallen into such a classification.

Kingdom—Animal. A glance is sufficient to establish it as an animal and not a plant.

Phylum—Arthropoda (Jointed legs). All animals possessing jointed appendages, i. e., antennae, jaws, palpi and legs, fall under this phylum.

Class—Crustacea. All Arthropods fall into two classes, Crustacea and Arachnida.

CRUSTACEA

Arthropods of usually aquatic habitat and breathing by gills (exceptionally through the general body surface with one or two pairs of appendages (antennae) in front of the mouth, the first of which is purely sensory, and several pairs of post-oral appendages, some of which are modified into organs of mastication. Appendages with typically a basal joint (protopodite) giving rise to two or three branches.

ARACHNIDA

Arthropods in which branchial folds function as gills or as lungs, or become metamorphosed into air tubes (air tracheae) penetrating the body. The body is divided into two regions, cephalothorax and abdomen, the line between the two passing behind the sixth pair of appendages. Cephalothorax segments usually coalesced, those of the abdomen either free or fused. Frequently a post-oral spine is present. Antennae lacking.

Sub-Class—Trilobita (three lobed). The animal is divided longitudinal by two dorsal furrows or grooves into three portions; the central portion known as the axial lobe and the outside lobes known as pleural lobes. Transversely the shield of the animal is divided into (1) a head portion called cephalon; (2) a series of joints or segments forming the thorax; and (3) a tail piece or pygidium forming the abdomen.

Order—Opisthoparia. Trilobites are divided into three orders (1) Hypoparia, (2) Opisthoparia, (3) Proparia depending on the position of the facial suture. If the sutures are ventral, marginal or submarginal, we have Order (1) Hypoparia. If the sutures extend forward from posterior part of cephalon within the genal angles, and cutting the anterior margin or more rarely uniting in front of glabella, we have Order (2) Opisthoparia. If the facial sutures extend from the lateral margins of the cephalon in front of the genal angles, inward and forward, cutting the anterior margin separately or uniting in front of glabella, we have Order (3) Proparia.

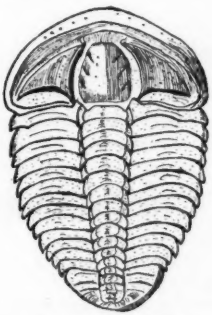
Family — Conocoryphidae (genal spines). Eye lines present but neither ocelli nor compound eyes. Thorax with from 14 to 17 segments. Pygidium small. Cambrian.

Genus — Conocoryphe (cone shaped head).

Species—elegans (beautiful).

The species name is like the first name of a person and is named like the other groups after some distinguishing feature or after the man who discovered the species.

As a rule the Kingdom-Phylum and Class are easily known. However, it is a little difficult to get the Order and it gets more difficult to recognize the other classifications and the specimen must be studied carefully. Calymene meeki and C. niagarensis look very much alike. But a careful study with a hand lens will show that niagarense has a node between the axial lobe and the pleural lobes on each segment.



Conocoryphe Sulzeri
A Trilobite

The Animal Kingdom may be divided primarily into two series of branches; those for the most part composed of a single cell, represented by a single branch, the Protozoa, and those whose bodies are composed of many cells (Metazoa), the cells arranged in three fundamental cell layers.

PHYLA	CLASSES
I. Protozoa (Single-celled animals)	1. Foraminifora 2. Radiolarians
II. Porifera (sponges)	Rhizopods
III. Coelenterates	1. Hydrozoans (jelly fishes, graptolites) 2. Anthozoans (corals)
IV. Echinoderms	1. Cystoids (bladder-like forms) 2. Blastoids (bud-like forms) 3. Crinoids (lily-like forms) 4. Ophiuroids (brittle stars) 5. Asteroids (common star fishes) 6. Echinoids (sea urchins) 7. Holothuroids (sea cucumber)
V. Vermes	
VI. Molluscoids	1. Bryozoans (sea-mosses) 2. Brachiopods (lamp shells)
VII. Mollusks	1. Pelecypods (oysters, clams) 2. Gastropods (snails) 3. Cephalopods a. Tetrabranchs b. Dibranchs
VIII. Arthropods	1. Crustacean a. Merostomes b. Trilobites c. Eucrasteans 2. Arachnids (spiders, scorpions) 3. Myriapods (centipedes) 4. Insects
IX. Vertebrates	1. Ostracoderms (armored fish) 2. Fishes 3. Amphibians 4. Reptiles 5. Birds 6. Mammals

This classification after Zittel with certain modifications and omissions.

DEPARTMENT OF ARCHAEOLOGY

Conducted by
B. F. Seagle, Jr.,
Associate Editor

Archaeology is the study of prehistoric remains, or the relics of the early races of mankind. It is the science of antiquities. One of the most fascinating studies in the world.

Sphinx of Gizeh a great lion in repose, new Egyptian excavations reveal. Immense monument discovered to be a huge lion hewn from solid rock. Many new discoveries after six months of digging. Egyptian Government sponsors operations to preserve statue, which is rapidly disintegrating. Restoration planned for benefit of posterity. The Sphinx is over 6,000 years old, authorities maintain. Two massive paws, hitherto concealed, unearthed. A granite altar indicates that the Sphinx may have served as temple in early Egyptian era.

The mysterious Sphinx of Gizeh, which for countless centuries cherished,

in company with the most famous of the pyramids on the Plain of Gizeh, the hidden culture of the earlier eras in Egyptian history, resisting every effort to penetrate the deepest lore of its early kings, has at last been forced to render up its secrets.

Borings are to be made to discover the location of the subterranean canal which is supposed to exist in the vicinity of the pyramids. Archaeologists believe that there is sufficient evidence of the existence of such a canal to warrant the exploration. Herodotus relates that the body of Cheops, builder of the great pyramid, was buried on an island formed by a channel of water brought on an aqueduct from the Nile.

Archaeologists have made more great finds or discoveries in Mexico, relating to prehistoric races, than in any other country on earth.

Ancient Indian skeletons found. The pioneer days of Kentucky were vividly recalled recently, when twenty-one skeletons of Indians were unearthed in the vicinity of Mays Lick by Scientists from the University of Kentucky. Most of the graves which the Archaeologists discovered contained two or three bodies. All of these graves were lined with stone. According to Doctor W. K. Funkhouser, one member of the party, the presence of more than one body in the grave was an indication of the prevalence of the ancient Indian practice of killing other members of the chieftain's family and interring them with him, when he died.

In addition to the skeletons, a number of shell-and-bone decorations such as have never been seen before were also dug up. The graves were found in a cultivated field, and the positions in which the skeletons rested pointed to their having been buried in a setting position.

Our own Southwest, Arizona and New Mexico especially, is as rich a storehouse in archaeology as can be found anywhere. The world is only waiting for more discoveries and information regarding these interesting ruins.

BURIED INDIAN FOUND ON FALL RANCH

The discovery of a buried Indian village on the ranch of A. B. Fall, near Three Rivers, New Mexico, has aroused a great deal of interest in archaeological circles in the Southwest. The excavation work is being carried on under the direction of C. B. Cosgrove, and has revealed two perfect rooms. The walls of the first are nine feet three inches by nine feet six inches. The second room measures twelve feet three inches by twelve feet six inches.

The smaller room contained some skeleton remains. One skeleton was that of a man buried with his knees drawn up to his chest, as was the custom of the Mimbres Indians. The second skeleton was in a semifixed position. A red and black bowl covered the head. This also is a Mimbres custom. The bones of the skeletons were water soaked and extremely brittle. A turquoise earring, the size of a dime, was found in the larger room.

The most ancient ruins in Palestine yield proof of the historicity of Jacob. For a decade and more past, a group of Bible archaeologists have had their interest centered on the ruins of Shechem, indisputably the most important site for the uses of Bible proof to be found in the Holy Land.

Under the walls of Abraham's home city are foundations dating back to days before the invention of shaped bricks.

The "Ivory Palace", where Queen Jezebel was dashed to death, uncovered. The real Tower of Babel found. And the very Synagogue where the Saviour preached being rebuilt. And twelve expeditions to the Holy Land still steadily unearthing fascinating evidence of the TRUTH of Scriptural narratives.

NOTES AND NEWS OF MINERALS OF THE RARER ELEMENTS

By O. IVAN LEE.

Mr. Lee will be glad to assist subscribers in identifying specimens suspected of being minerals of the rarer metals or in answering questions pertaining to them. Please write to him direct, enclosing postage if a personal reply is desired, specimens returned, etc. Address all mail as follows: O. Ivan Lee, 2684 Boulevard, Jersey City, N. J.

Provisional List of the Richest Minerals of the Rarer Elements (Native Elements and Unconfirmed Species Excepted)

(Every effort has been made to insure accuracy, but subsequent changes may be necessary)

Element	Mineral	Chemical Nature	Maximum Percentage of Rarer Element Recorded
Beryllium	Bromellite	Beryllium Oxide	98% BeO
Cesium	Pollucite	Hydrous cesium sodium silicate	36.77% Cs_2O
Cerium	Bastnaesite	Hydrated carbonate and fluoride of cerium	41.04% Ce_2O_3
Columbium	Columbite	Columbate and tantalate of iron and manganese	77.97% Cb_2O_5
Erbium	Sipylite	Columbate of erbium	26.94% Er_2O_3
Germanium	Germanite	Germanium bearing copper ore	8.7% Ge
Hafnium	Alvite	Altered zircon	16% HfO_2
Lanthanum	Lanthanite	Hydrous lanthanum carbonate	52.4% La_2O_3
Lithium	Eucryptite	Orthosilicate of lithium and aluminum, embedded in albite	10.90% Li_2O
Molybdenum	Molybdenite	Molybdenum sulphide	60% Mo
Platinum	Sperrylite	Platinum arsenide	56.5% Pt
Rubidium	Rubidium-Microcline	Amazon-stone containing rubidium	3.12% Rb_2O
Ruthenium	Laurite	Ruthenium (and osmium) sulphide	65.18% Ru (with some Os)
Scandium	"Befanamite"	Yttrium free thortveitite	42.4% Sc_2O_3
Selenium	Umangite	Copper selenide	45.1% Se
Tantalum	Skogbœlite	Iron tantalate	84.44% Ta_2O_5
Tellurium	Tellurite	Tellurium dioxide	79.6% Te
Thallium	Lorandite	Thallium arsenious sulphide	59.76% Tl
Thorium	Orangite	Variety of thorite	71.65% ThO_2
Titanium	Rutile	Titanium dioxide	100% TiO_2
	Octahedrite	Titanium dioxide	100% TiO_2
Tungsten	Tungstite	Hydrated tungstic oxide	92.8% WO_3
Uranium	Uraninite	Uranous uranate	87.9% UO_3
Vanadium	Vanoxite	Hydrous vanadyl vanadate	75.9% V_2O_5
Yttrium	Xenotime	Yttrium orthophosphate	62.49% Y_2O_3
Zirconium	Baddeleyite	Zirconium oxide	98.9% ZrO_2

Gems and Precious Stones of the Rarer Elements

Characteristic Rarer Element	Mineral and Formula	Varieties and Colors	Colors	Luster	Hardness	Specific Gravity
Lithium	*Spodumene* $Li_2O.Al_2O_3\ 4SiO_2$	1—Colorless 2—Yellow 3—Blue 4—*Hiddenite*	Yellow-green to deep emerald green	Vitreous	7	3
		5—*Kunzite*	Pale pink, lilac, rose, amethystine			
	Lepidolite $12\ SiO_2.3Al_2O_3\ 3\ Li_2O.2K_2O.8F$		White, greyish yellowish, violet-grey, rose-red.	Pearly	2.5	2.8-3.0
	Tourmaline $H_2OB_2Si_4O_{21}$	1—*Achroite*	Colorless	Vitreous to resinous	7	3.1
		2—Green-yellow				
		3—Amber				
		4—Brazilian Emerald	Grass-green, bottle-green			
		5—*Rubellite*	Pink, red			
		6—*Indicolite*	Blue, blue-green			
Rubidium	*Rubidium-Microcline* (Amazonstone)		Bright verdigris-green	Vitreous or pearly	6-6.5	2.5
Cesium	(See under Beryl)					
Beryllium	*Chrysoberyl* $BeO.Al_2O_3$	1—*Alexandrite*	Olive to sea-green (daylight) Columbine-red (artificial light)	Vitreous	8.5	3.6
		2—*Cat's eye* (*Cymophane*)	Yellow-green to orange-brown, pale yellow, green-yellow.	Silky		
	Phenacite $2BeO.SiO_2$		Colorless	Vitreous	7.5	2.95
	Beryl $3BeO.Al_2O_3.\ 6SiO_2$	1—*Cesium Beryl*	Pale green, colorless, rose	Vitreous sometimes resinous	8	2.7
		2—*Golden Beryl*	Straw, golden-yellow, orange-yellow			
		3—*Aquamarine*	Sea-green, sky-blue, deep-blue			
		4—*Emerald*	velvet green intense "			
		5—*Vorobyevite*	Peach-blossom			
		6—*Morganite*	Rose			
	Euclase $2BeO.Al_2O_3\ 2SiO_2.H_2O$		Colorless, yellow, pale blue to green	Vitreous somewhat pearly	7.5	3.0
	Herderite $(CaBe)_3\ (PO_4)_2\ (CaBe)F_2$		Colorless	Vitreous	5	3
	Beryllonite $BeNaPO_4$		Colorless	Vitreous, brilliant, somewhat pearly	6	2.85
	Gadolinite	(See Yttrium)				

Gems and Precious Stones of the Rarer Elements

Characteristic Rarer Element	Mineral and Formula	Varieties and Colors	Colors	Luster	Hardness	Specific Gravity
Cerium	*Allanite** (opaque) 4(CaFe)O 3(AlCeFe)2 O3.H2O.6SiO2		Rich black	Weak, greasy	5.4	3.7
Columbium Yttrium	*Euxenite** (opaque)		Brownish-black	Brilliant metallic, vitreous, or somewhat greasy	5-6	4-5
	*Polycrase** (opaque) R2(CbO3)3.2R2(TiO3)3. 3H2O		Rich black	Vitreous to resinous	5.5	5
	*Samarskite** (opaque)		Velvet black	Vitreous to resinous, splendent	5.5	5.7
	*Fergusonite** (opaque) R(CbTa)O4		Brownish-black	Brilliantly vitreous	5.5	5.8
Tantalum	*Microlite* 2CaO.Ta2O5		Essonite red to rich spinel yellow.	Resinous	5.5	6.1†
Thorium	*Orangite*		Bright orange yellow	Resinous	4.5	5.3
Titanium	*Quartz* (Quartz with rutile inclusions)		Red-brown	Vitreous	7	2.7
	Rutile TiO2		Black to dark ruby red	Metallic to adamantine	6-6.5	4.2
	Octahedrite TiO2		Pale green to blue	Adamantine	5.5-6	3.9
	Titanite (Sphene) CaO.TiO2.SiO2		Honey-yellow, golden yellow, yellowish-green	Adamantine	5.5	3.5
	Benitoite TiBaSi3O9		Pale to deep Sapphire-blue	Vitreous	6.5	3.65
	Neptunite		Dark red	Vitreous	5.5	3.2
Yttrium	*Gadolinite* (opaque) Y2O3.2BeO.FeO.2SiO3		Greenish-black	Vitreous to greasy	6.5	4.4
Zirconium Hafnium	*Zircon** ZrO2. SiO2	Hyacinth	Orange red to brown	Adamantine	7.5	4.7
		Jargoon	Colorless, yellow, smoky.			

* Radioactive.

† The specific gravity is higher than that of any other known gem.

THE PROSPECTOR'S DEPARTMENT

Conducted by
B. F. SEAGLE, JR.,
Associate Editor

THE LOST LEDGE OF GOLD

The country for about fifty miles north and northeast of Reserve, New Mexico, consists of numerous valleys, sloping to the southwest, some containing running streams all the year round. Some years ago two young men on a hunting and prospecting trip camped for some time in the region. One day, while taking a drink from a waterfall, one of the young men, quite by accident, thrust his head through the water, finding a cavity behind the waterfall. He idly picked up a few rocks and carried them back to camp. These rocks proved to be gold nuggets.

Soon thereafter, his partner became ill, so they returned to Magdalena, New Mexico. There, however, pneumonia developed and his friend died. Being very short of money, the young man surviving disposed of the nuggets that he had found behind the waterfall, to B. L. Byrets, of Socorro, New Mexico, who found them to be almost pure gold.

As soon as possible the young man who had found the nugget returned to the country and began hunting for the waterfall. But with hundreds of valleys and countless waterfalls he was unable to locate the right one. He finally lost his mind hunting for the gold, and was then taken to an asylum, and there he attempted to continue his prospecting, laboring under the delusion that he was out in the wilds instead of in a cell.

Numerous people in that section of New Mexico have hunted for the waterfall without success. In Zuñi, New Mexico, a very old Indian squaw claimed that she had often visited the ledge and that Geronimo's band of Indians used to go there and get gold to trade at the Indian stores in Arizona. She claimed, however, that the signs of the trail had been destroyed by the settlers, and also that the water poured from the ledge at a certain time of the year only. That would fit the description of hundreds of waterfalls in that country, however.

The general vicinity of this ledge is somewhere between Piñon Mount—known there as Cottonwood, Fox, and Elk Mounts—and Frisco Creek. Some day it will probably be found by accident.

"Gold is where you find it."

The United States produces approximately one-third of the mining products of the whole world. The annual output of our mines and quarries now exceeds $5,000,000,000 in value. Over a million men are employed in mining and twice that number are engaged in handling, transporting, and manufacturing mineral products, which make up 65 per cent. of the freight traffic of the country. The states east of the Mississippi contribute about 65 per cent. of the total mineral production.

FACTS ABOUT GOLD

On account of its beautiful color and since it does not become tarnished or corroded in use, gold is considered the most precious of metals and is used as the principal basis of value throughout the civilized world. It has been known from time immemorial, and is found in many parts of the world. It is usually found in the metallic or native state in the form of nuggets or smaller particles, in sand or gravel, or distributed through rocks or veins. Nuggets weighing as much as 1,000 ounces have been found. Native gold usually contains some silver.

The metal is also found in combination with tellurium as "telluride ore" and it frequently accompanies copper ores and iron pyrites. The extraction of gold from sands or gravels, called alluvial or placer mining, is accomplished by washing with water in various ways. The heavy gold sinks to the bottom when the material is stirred up with water, and mercury (quicksilver) is usually used to amalgamate the gold

and hold it. Gold ores have to be powdered by stamp mills or other devices before the gold can be extracted, and sometimes they must be heated to redness (roasted) to drive off tellurium or other impurities. One of the modern methods of extracting gold from ores consists in dissolving out the metal with water containing potassium cyanide. This is known as the "cyanide process."

Gold is the heaviest of all the familiar precious metals except platinum. It is more than nineteen times as heavy as water. In malleability it stands first among the metals, as it is capable of being beaten to a thickness of 1-250,000 of an inch and ductile enough to be drawn into a wire 500 feet long and weighing only one grain. It may be alloyed with other metals to change the color of designs. The best known alloy of gold is that with copper, which is used for gold coins.

The chief gold discoveries have been in California, 1848; Australia, 1851; British Columbia, 1858; New Zealand and Nova Scotia, 1861; South Africa, 1868; West Australia, 1870; South Australia, 1886; Alaska and Klondike. Important discoveries of gold were also made in Porcupine, Canada, in 1910.

To the youth who is thinking of taking up mining and becoming a Mining Engineer, why not enter some School of Mines, such as the Colorado School of Mines at Colden, near Denver, and take a regular course in Mining. This requires a High School graduate's training and the student is near a large mining field, where he may obtain summer work, enough to defray all college expenses. The tuition is $225 per annum. If you tackle it, be sure an take Spanish for the four years, or as long as possible, as you can obtain immediate employment at not less than $200 gold per month, in Spanish-speaking countries, as engineer or superintendent. Mining and Mining Engineering holds a great future for the American youth and the other youth of the world as well.

Gold was first discovered on the North American continent on land of a wayside cobbler in North Carolina in 1828.

Many mineral products of value are overlooked by the prospector in his search for precious metals. Some years ago a quantity of Scheelite was thrown over the dump of a Montana mine. It was thought to be quartz and of no value. Later its value was discovered and a carload was shipped east which netted the owners of the mine ten thousand dollars.

A zinc ore at Leadville was passed over for years as "country rock" and was discovered only when an assayer tested it for zinc. It was worth millions of dollars to that city. Eminent geologists misnamed thousands of acres of phosphate rock covering portions of three states because it did not look like any phosphate rock ever before discovered. Its nature was revealed by chemical analysis.

It will readily be seen that it is a very easy matter to overlook valuable mineral deposits. It is prudent to have specimens of unusual minerals tested by someone who is competent by training and experience to do such work. In case the mineral is found to be of value the deposit should be carefully sampled and an analysis made to determine its commercial value.

There is money in other minerals besides the precious ones. And it will be worth while to keep your eyes open and always be on the lookout for minerals besides gold and silver.

"All is not gold that outward shewith bright."

It is reported that a woman who has been mining for 16 years, has at last, at the age of 76, struck a seam of gold near Deadwood, Nevada, samples of which were sent to the outside and netted her over $2,000. It seems that mining is not confined to man alone.

The first substantial confirmation of a tale of a tropical valley in Northern British Columbia, which has been current in the Canadian Northwest fifteen years, was given by two aviators who penetrated the wilderness in a plane, prospecting for gold.

Col. Williams, pilot of a Vickers-Viking seaplane, and Mechanic Caldwell say they found a huge valley covered

with a stream-like cloud coming from bubbling hot springs, where luxurious growth reminded them of the tropics. They were accompanied by Archibald Little, a Detroit mining engineer, who is bringing his gold samples south on a coasting steamer.

The United States Mint will at any time pay $20.67 per ounce for pure gold, cash, dust, nuggets, native, in quartz, in minerals of iron, copper, lead, etc.

Come on Prospectors—from everywhere, and send us in notes of facts and other material. Also tell us just what you want, so that in the future we can make "Rocks and Minerals" even bigger and better, for we are working to make it a monthly, but we need your help. So get your brother prospectors and friends to subscribe too.

LOCALITIES DEPARTMENT

Under this heading we shall be glad to publish clippings, notes, news, or items on mineral localities and minerals found there. Please give as much information as possible.

The minerals of Paterson, N. J., need no introduction to experienced mineralogists. Quartz appears in numerous forms, fine crystals being more common than large ones. The drusy type is frequent. Glossy black Quartz, Amethyst, red Quartz, with some Chalcedony and other phases, are on the list. Calcite appears in many beautiful types. The Zeolites and other hydrous silicates from this place are world-famous. They include Prehnite, Pectolite, Apophyllite, Heulandite, Chabazite, Stilbite, and, less commonly, Gmelinite, Babingtonite, Natrolite, Thomsonite, and others. Along with these are found Hematite, Chalcopyrite, Diabantite, and other minerals. Special attention has lately been attracted by the sudden appearance of Barite in platy forms found hardly anywhere else, also by a recent coming out of Chrysocolla, Gypsum, and Anhydrite in one of the local quarries. I can supply a majority of these minerals, some in limited and others in larger quantity and variety; also the rare Franklinite, Zincite, Willemite, Rhodonite, Hancockite, Graphitic Limestone and unusual colors of Calcite from Franklin Furnace, with Magnetite, Amphibole, Pyroxene, Epidote, Garnet, and other specimens of various ore minerals from the New Jersey Iron Mines; also some fine Serpentine from Haskell, N. J., in exchange for minerals from other localities. Write to James F. Morton, Paterson Museum, Paterson, N. J.

On the Pine Indian Ridge Reservation, 28 miles south of Interior, South Dakota, is the only known deposit of Calcite-Sand crystals in the world that occur in six-sided forms. The crystals have formed in beds of fine quartz sand and are 60% Quartz. They are in single, grouped and massed formations, and ledges almost solid. Rattle-snake Butte, on which they are found, is a low sandstone ridge in the open prairie and infested with rattle-snakes. Perhaps the only reason it is honored with the name is because of an Indian tradition that it is the abode of a man-eating Devil-snake. The roads are very poor, being merely cattle-men's roads that lead nowhere in particular, and much inquiry must be made or a guide secured to find the way. The "Butte" is on land allotted to some Indian Brave who lives far away on the river and knows or cares little about it. When he gets his patent he will sell cheap and it may be closed to the public. The state is being urged to make it a reserve and thus stop the waste of specimens. A party from the South Dakota School of Mines camped here last summer and took away with them many fine museum specimens.

H. N. McConnell
Boulder, Colo.

THE BEGINNER'S CABINET

A Department for Young Collectors

Conducted by
ILSIEN NATHALIE GAYLORD

WHAT THE MARBLE STEPS CAN TELL US

Vacation! That means long summer days to spend in gathering specimens for the cabinet. "What shall we look for, and where shall we find it?" There is scarcely a place we can go, where some interesting specimen is not at hand.

If it is to the hills or mountains that our vacation trip takes us, there will be a wealth of specimens to be gathered from the rocks all about us. Around crumbling rocks, especially, is a most promising place to find crystals. As the rocks are worn away by the weather the crystals in them fall into the soil beneath. Ores, and curious rock-forms will be easy to find, too. The tailings of an old mine are often like a treasure chest of specimens.

On the farms are the rock piles and boulders and ledges to be carefully searched for crystals. Even among the roots of decaying tree-stumps in an old wood-lot, beautiful crystals have sometimes been found. As for the rocks of an old stone fence, some of them may be full of the most interesting fossils. Such a wonderful story those fossils can tell us! Then there are the curious pebbles to be found along the shores of lakes and streams. Some will be of bright carnelian or darker jasper. Others will have been scratched and flattened by great glaciers of long ago. Perhaps little crystals of garnet and topaz you will find among the pebbles, too. On some shores they are very plentiful.

In the cliffs by the ocean, fossil fishes and shells sometimes show clearly in the crumbling rocks. And along the southern seashore is formed the coquina rock, made of little shells and coral fragments cemented together by lime. All kinds and colors of sand, too, we will want to carefully place in separate little bottles, and study them under the microscope. Some of Nature's most wonderful secrets she has hidden away in a grain of sand.

But many of us cannot get away to the country or shore for a vacation. That need not hinder us, however, from gathering many of the most beautiful and interesting specimens one could have in a cabinet. "How can that be?" Because in a city there are always buildings going up. In these buildings, especially in the fine ones, beautiful stones are used for ornament. Now and then one of these stones by some accident is damaged beyond repair. And if you ask the right persons, they will give you the broken pieces for specimens.

In all sorts of other places in a city you will find interesting specimens, too, for your collection. In excavations, or where wharves are building, or parks being laid out, or old stone walls crumbling to ruin—in such places as these, and in many others, specimens are sure to be turned up which you will be delighted to have.

But today it is those white marble steps where you are standing that we are to study. Millions of years old are those white stones, and the adventures they have been through are as strange as any fairy tale. To begin with, long ages ago they were not marble at all. They were not even stones. They were part of little sea creatures which floated in sunlit seas. In those far-away times, North America did not look at all as it does now, with all its great mountains and rivers. Then there were vast seas covering much of what now is dry land.

But in those great seas were myriads upon myriads of tiny sea creatures, no larger than a grain of sand. Yet each one was protected by a little shell which it formed of the lime in the water. Foraminifera is our long name for these wee creatures. As they died their tiny shells sank to the ocean floor. Because there were such vast numbers of them they formed thick layers, as long ages

passed. Limestone beds, we call those layers of tiny shells.

Corals and other kinds of shell-folk, too, helped to form the limebeds. One kind was the "stone lily". These lilies grew like low, thick forests on the ocean floor. Real magic could not be stranger than their curious lives. At first each was like a tall lily, growing on a long stony stem. But after a while the lily head would break off and swim away, a little live starfish animal.

What could be stranger than to begin life like a plant fastened to the ocean bottom, then to change into a little live animal free to swim where it would? Yet this is just what happened to those ancient stone lilies and feathery star fishes. Even today there are stone lilies in our oceans. With our own eyes we can watch them change into small live starfishes and swim away. Finally those ancient stone lilies and feathery starfishes died and sank to the ocean floor. In this slow way, gradually the layers grew thicker and thicker.

But at last there came changes, tremendous changes, to the limestone beds. Enormous earth forces of heat and pressure thrust them far up from their quiet resting-places and made them a part of great mountains and cliffs. But through all the terrific rending and tearing, the limestones still kept within them the shapes of the little sea shells which made them.

To this day we may see those tiny shells and broken fragments in the limestone, if we look at it through a lens. Often we find this white stone with its sea shells on the tops of high mountains. But wherever we see it, we know that once it rested far down on the bottom of some ancient ocean.

Now about our marble steps. They were once this white limestone. But where they happened to be the heat was so terrific that it changed their articles into crystalline grains. That destroyed the shape of the little sea shells of which they were made. Seldom do any of them now remain in the marble. Perhaps your vacation trip will take you where there are large marble quarries, or great limestone cliffs. There you can search for the place where the limestone with its little seashells grades into crystalline marble.

All this is what the marble steps have to tell us. That once they actually were alive, floating about in the sea, part of the curious little creatures that lived there. Then for long ages they laid on the ocean floor as limestone beds. After that came the terrific upheaval and pressure and heat, which changed them into marble. Now they lie quietly here, these centuries-old rocks. Hundreds of passing feet tread upon them, never dreaming of their strange history and great age.

TREASURES OF THE LIMESTONE: GARNETS

Stone lilies and tiny seashells are not the only treasures of the lime rocks. Little red garnets you will find there too. Real gems they are, for they are used in jewelry. Many an extra bit of spending money have sharp-eyed boys earned by spying out these little red garnets and selling them to some jeweler.

It was when the limestone beds were going through their terrible up-thrusting times that the garnets were formed. The heat then was terrific, melting the minerals in the rocks. Some of the minerals were the kind which crystallized into garnets as the limestone cooled. Hidden away in the depths of the rocks, there they have waited for thousands of years, to be freed from their stony prison.

In some places the garnets are so small and so plentiful they look like little red seeds scattered through the rock. However, there is use for even such small ones. The inside of your watch will show you how some of these minute garnets are used for pivot bearings. They are very hard and will not easily wear away. That is why they are used instead of metal bearings in watches. Many other uses there are, too, for these tiny garnets.

Usually we think of garnets as red. Much of the garnet jewelry is that color. The pretty brooches, rings and buckles so fashionable sometime ago were set with these tiny red stones. But all garnets are not red. In lava rocks are little black ones. Often in other rocks they are green or yellow or cinnamon brown. It is iron or some other mineral combining with silica which gives the garnets their beautiful colors.

However, the little red garnets are the ones which you are most apt to find all

over the United States. Among the pebbles and sand along many a lake or stream you will find them. Some will be small as sand grains, others will be large enough for settings in jewelry. Although many of the garnets will be water worn, others will be bright fragments or perfect little crystals. Long ago they were weathered out of the rocks and washed down stream.

In our first collecting trip, you remember, we learned to watch for long sharp-pointed quartz crystals. But garnets are not at all that shape. They are like small cubes which have had their edges planed off. That leaves them little twelve-sided crystals. Sometimes they will have twenty-four, or even thirty-six sides, or "faces", as they are called.

In Alaska quantities of red garnets are found as large as big marbles. They have thirty-six faces, but they are not clear enough for gems. In the United States, however, such very large ones are not so plentiful. But we do have little "freak" garnets. They are garnet only on the outside. Inside they are quartz, or calcite, or banded with garnet and some other material. Usually these little freaks are lighter in weight than perfect garnets.

In mica schists and other rocks too, as well as in limestone, you will find plenty of little red garnets. Many of them will not be large enough or perfect enough for gems. But now and then there will be a real jewel among them. As a rule a jeweler is quite willing to look over the ones you have found, and tell you if there are gems among them. But even if you do not find real gems, a piece of limestone or green chlorite filled with little red garnets will make an interesting specimen for your cabinet.

On some lake shores tiny garnets are exceedingly plentiful. They lie like little piles of sand and small stones along the water's edge. Manufacturers make them into a kind of garnet sand-paper. What a fate! To be used for common scouring-paper, instead of being set in beautiful jewelry. And all because they did not happen to grow quite big enough for gems. A little bottle of this red garnet sand, filled with water, is a pretty sight under a magnifier.

But it is the Indians of Arizona and New Mexico who know of the most amazing place to collect garnets. That is around ant hills. Many a beautiful little garnet gem the Indians have taken from the ants, and brougt to the jewelers. To the ants, the garnets seem like hard lumps which they cannot soften. So with much tugging and pushing, up they bring these stubborn little stones out of the nest. The nests are made where garnet-bearing rocks long ago crumbled to pieces, scattering the garnets through the earth.

CALCITE CRYSTALS

Now for another of the limestone's treasures, calcite crystals. Hidden away in little cavities and in caves is where the limestone keeps these crystals. Pretty ones they are, and full of the most surprising habits. If you put a drop either of very strong vinegar or of hydrochloric acid on a calcite crystal, it will bubble and phizz at a great rate. It is no wonder that there is a phizzing, for the calcite is letting out the same gas which makes the soda-water bubbles.

This acid test is one way in which you can recognize a calcite crystal. Another proof is that you can scratch or powder it with your knife, for calcite is soft. You will need these sure tests, for calcite crystals have many forms. One form is in long, fairly clear crystals somewhat like those of quartz. Another form is in cube-like blocks, or in flat sheets. Sharp "dog tooth" crystals there are, too, short and pointed like a dog's two longest teeth.

Plenty of these calcite crystals you will find, for they are very common. Limestone caves are apt to have them, lining the walls and hanging from the roof like icicles. Geodes are often full of them. You remember that we learned about geodes in our lesson on quartz. Geodes are the round stones which you crack open and find lined with sparkling crystals, like frosty little caves. In limestone quarries, too, is a good place to find calcite crystals. Lime is made of calcite, and there is limestone all over the United States. So you will probably find plenty of calcite crystals on your collecting trips.

Some of the crystals may look rough and misshapen on the outside. But do not throw them away because of that. Indeed, no! These rough crystals have an amazing surprise inside of them. Just

carefully crack one in two. It will split in three directions, leaving a lozenge-shaped crystal for you. Try how you will, you cannot make that calcite crystal crack into any other shape. Although you break it into the tiniest of pieces, each one will be a little lozenge.

Rhombohedron is the scientific name for this lozenge shape. Spar is a common name. They are like cubes which have been flattened cornerwise. Like the rest of the crystals, these little spars have their tricks too. If your spar is clear like glass, and if it is at least a quarter of an inch thick, it will "show off" for you. To begin, draw a heavy black line on a sheet of paper. Then place the spar on it. Two lines will appear through it instead of only one. That is because a ray of light splits up and goes in two directions through the crystal. The lines will be as far apart as your spar is thick.

Now slowly turn the spar half way round. Only one line is left. But the line is longer than were the two lines, or the line which you drew. It is as much longer as the thickness of your spar. One more trick the spar will show you. Suppose you put a dot on the paper, instead of a line. Then turn the spar and watch the dots run around each other.

Calcite Crystals Stone Lily Foraminifera (enlarged) Garnets

The first calcite spars were found in Iceland, so they were called Iceland Spar. These trick spars make a wonderfully interesting specimen for the cabinet. Some of them are so very clear they are used in making microscopes. But not all calcite crystals are clear. Often they have a pale yellow tint. Sometimes they are colored deep red or yellow by iron, or perhaps only the tips of the crystals may be touched with color. A clear honey-yellow calcite looks good enough to eat as candy.

Then there is the massive calcite. Like the rose quartz, its myriads of little crystals did not have time nor room enough to develop into full crystals. So it stayed in a crystalline mass, as it is called. Most beautiful colors has this crystalline calcite. Some of it is bright salmon, and some a lovely blue-gray shade. Without fail you will want specimens of these for your cabinet. Bright, showy spots they will make on your shelf of crystals.

COLORED MARBLES AND CHALK

Marble is not always white, like the slabs of these steps. Sometimes mud and other impurities sifted down onto the limestone-beds when they were forming, and colored them. Only pure limestone and pure marble is snowy white. Because there are so many colors and tints among the marbles, a collection of them will make a beautiful showing in your cabinet.

There are several shades of gray marble, besides bright red, dark red, pink, yellow, green, chocolate brown, and black varieties. Most of the black marble, however, is very hard limestone instead of real marble. But it takes a fine polish just like marble. If there is a marble quarry near your home, you can gather whatever colors are found there. In both the eastern and western sections of our country there are large marble quarries, and smaller ones in a number of the other States. Almost any contractor near you can tell you if there is a quarry in your vicinity.

For some of our fine buildings, such as libraries and churches, beautiful marbles are brought from far-away countries. There is the Siena marble, yellow as a lion's coat, with dark markings in it. It comes from Italy. Many entrance halls or stairways in large buildings have great guarding statues of lions carved out of this tawney yellow marble. There is a Mexican marble, snowy white with splashes of red and green all through it. The red is garnet. A beautiful bright red marble is found in Vermont.

Then there are the banded marbles. They were made by deposits of lime in fresh water lakes and streams and springs. As those ancient waters dried away the impurities in them settled in layers according to their weight. That is what makes the different bands of colors in some of our western so-called "onyx" marble. But real onyx is quartz. So a little strong vinegar or a drop of

muriatic acid on your specimen will soon tell you whether or not it is true limestone marble. Quartz onyx will not bubble under the acid.

Some marbles are full of veins of different colors. These veins were once cracks. They came when the marble was so terribly stretched and squeezed and crushed in the great up-thrusting that it went through. Into the cracks poured different liquid minerals, and then hardened there. The rich velvety-black streaks and patches in some of the light colored marbles are graphite. Graphite is the "lead" in your lead pencils.

This veined marble is often exceedingly beautiful. Sometimes the veins spread out into patches of color. Then they look like landscape pictures of trees and lakes and floating clouds. There are surely a score and perhaps many more of these beautifully colored marbles. So a collection of them would make one of the showiest sections in your cabinet. Specimens of the kinds which you cannot find near you can be purchased of mineral dealers for a small sum. Or perhaps you can exchange your specimens with friends or Scouts, for the kinds which they find where they live. Whenever you find good specimens on your collecting trips it is well to gather a number of them. Then you will have extra specimens to exchange with other collectors who live in other places.

CHALK

Now about that little piece of chalk, lying there by the black-board. It is really a soft crumbly form of limestone. Like the coarser limestone the chalk-beds, too, once rested far down on the ocean floor. And the little foraminifera made their powdery layers. Then just as to the limestone, so to the chalk came tremendous up-thrustings. What a magic change for the chalk-beds! No more long ages down on the dark ocean bottom. Now they gleam in the sunlight as great white cliffs high above our heads

Sometimes in our chalk pencil we come upon a sharp piece of grit which scratches the black-board. Most annoying it is, too, when we are hurrying with our writing or our problems. Yet if it were not for that little bit of grit—or some others like it—we might not be alive today. And North America might never have been discovered. It was little bits of grit such as this that began most of the history of man.

"How can all this be true?" To begin with, that little piece of grit is probably a tiny flake of flint. Flint is scattered all through the chalk cliffs. While the chalk was still on the ocean floor, quantities of sponges helped to form its layers. In the sponges were hard sharp-pointed darts. These little darts kept the other sea-folk from eating the sponges. When the sponges died these tiny hard darts sank to the chalk layers.

When the chalk layers were up-thrust the little sponge-darts crystallized into hard rough balls of flint. If a thin flake of flint is put under a strong microscope, you can still see the tiny sponge-darts all through it. Other hard parts of sea animals will be there, too, tough little jaws and parts of skeletons. When the soft chalk cliffs crumble away these hard flint balls loosen and fall into the earth.

Even in the long-ago age of the cavemen these flint balls were dropping from the chalk cliffs. So the cavemen gathered them up and chipped them into spear points. It is because they happened to think of making these spears that we are here today. All animals have to fight with some part of their body—tooth or claw, horn or hoof. Even primitive man had only his arms and teeth to fight with in those ancient days.

A poor chance of life he had in his struggle with the great savage beasts of that time. If he had not won we, his descendants, would never have been born. And he did win because he learned to fight with a weapon he could throw from him, while he kept beyond the animal's reach. No animal could make or throw a weapon. That is how it came to pass that man won in his great struggle over the beasts.

It was this flint in the chalk which turned the chance in man's favor. Fashioned into spear heads and other weapons and thrown from a distance, the beasts could not withstand them. So man has lived and progressed to our own fine civilization. This is the story of that tiny particle of scratchy flint in your chalk-pencil. And this is why if it were not for such flint in the chalk we probably would not be here today.

With all this wonderful history, surely the limestone should have a front place

on our shelf of rocks in the cabinet. It can well come next to the granite—that first and very oldest rock in the world. And the garnets and calcite will make a fine addition to our shelf of crystals. Other crystals there are, too, in the limestone. But we have not time to study them today. We must leave them for some other visit to the rocks. With all the quartz specimens and curious pebbles which we found on our last trip, and now our garnet and calcite and marble, our cabinet is already a bright showy place, and brim-full of history.

THE SLUICE BOX

By A. RIFFLE

On the April morning when the news reached our little Village in the Rockies that the United States had declared war on Germany, I noticed "Old Bill' busy with unusual activity with hammer, nails and some pieces of board. Later in the day he saw me coming down the street and beckoned to me to follow him. He took me down the road below the Village to an out of the way cut bank where manure, refuse, tin cans and junk from the Village had been dumped for years. In the center of this pile a post had been fixed upright and on it was nailed a board with a piece of paper fastened to it. "Old Bill" pointed to this paper and said, "Read it." I did. "Old Bill" had made a formal mining claim location on this scrap heap. It was dated April 7th, 1917, and he named it "The Kaiser Wilhelm Lode."

Well, at last we can subdue the inferiority complex that we used to suffer from when we met the stamp collectors. We now have a magazine as good as any they can boast of and it is getting better with every issue.

Now there are two classes of mineral dealers. Those to whom we can say "I saw your ad. in "Rocks and Minerals" and those to whom we ought to say "I didn't see your ad. in "Rocks and Minerals."

Here is some real advice, timely, pertinent, and worthy of your consideration. Don't spend it all for gas this summer; save some to buy specimens with next winter.

This is the tourist season. It is also the season when some resort merchants, and others also, palm off specimens, from God knows where, as local minerals and peddle imported imitation gems as native and genuine stuff. Watch them.

A good point to note when offered facetted gem stock in tourist localities, whether by a merchant or a native, is to notice if the vender has a great number of gems of the same size, kind and quality. If so, examine carefully before buying. Nature does not turn out these things so even in size and appearance, as a general rule, but manufacturers of synthetic gems do.

To those of us who live a settled life on the highways of the country, it often seems as though the rest of the nation is on wheels and all of them in a hurry. This craze for change and movement that has spread over the country like an epidemic, since the advent of the automobile, has been considered and discussed in lengthy editorials and magazine articles by many prominent men. It remained for "Old Bill," however, to diagnose it with two words. He calls it the "Gypsy Itch."

PUBLICATIONS RECENTLY RECEIVED

Modern Honduras—This interesting little magazine made its first appearance April 1st. As its name suggests, it is devoted chiefly to the interest and welfare of the Republic of Honduras in general, and of the English-speaking residing therein, in particular. The magazine is published in California and in English, though a few pages are in Spanish. It is a 64-page magazine, full of interesting items on Honduras, while many illustrations help to brighten up the pages. The magazine has no special date of publication at present but eventually it will come out as a quarterly and possibly a monthly should enough subscribers be obtained to warrant this. All readers who are interested in Central American countries, and Honduras in particular, should subscribe to "Modern Honduras" and otherwise give it their support. Copies of the April issue can be obtained at 25 cents each or $1 for a year's subscription. The Editor and Publisher is Cecil R. Mahaffey, 236 Fox Ave., San Jose, Calif. We extend to Mr. Mahaffey our best wishes in publishing a magazine of this nature.

Tenth List of New Mineral Names, with an Index of Authors: By L. J. Spencer, M. A., Sc.D., F.R.S., Assistant Keeper in the Mineral Department of the British Museum. This list, reprinted from the "Mineralogical Magazine", September, 1925, Vol. XX, No. 110, pages 444-447, gives names of new minerals describing each briefly, with localities and authors. A valuable list for the advanced collector. Copies can be obtained from the Publisher, Mr. Humphrey Milford, Oxford University Press, Amen House, Warwick Square, London, E. C. 4, England, presumably at a small price.

Hobby News: Here is a little magazine that should be of interest to all who are collectors, regardless what they may collect. Stamps, Coins, Curios, Indian Relics, Antiques, Guns, Books, Archaeology, etc., are only some of the subjects touched upon. A new magazine but already firmly established among live collectors. It is a monthly and the subscription price is only $2 per year. Published by Thomas Jefferson Eppes, Box 1913, Jacksonville, Florida.

Philatelic West: Feb., 1927, price 25c. This interesting magazine is, we believe, the largest and oldest collector's magazine in America. It touches on Coins, Curios, Stamps, Indian Relics, Antiques, etc. An "Inquiry Department" is also a feature, which in this issue covers two pages. This magazine is published quarterly and the subscription price is 75c per year in U. S. and Possessions, $1 in foreign countries. Address Philatelic West, Superior, Nebraska.

Tercentenary Christmas Number of "The Barbadoes Advocate"—1627-1927. This interesting magazine of 56 pages was specially issued by the Island's chief newspaper, "The Barbadoes Advocate," as a souvenir of the Tercentenary of the English settlement of the Island. Articles and other items relating to Barbadoes are the chief features, though many illustrations and advertisements will also be found. Though the price is not quoted copies may, perhaps, still be obtainable by addressing The Barbadoes Advocate, Broad St., Barbadoes, B. W. I.

The Girl Scout Leader: April 1927—8 pages. This interesting little magazine is the official organ of the girl scout organization. It comes out as a monthly and the subscription is only 50c per year. Published by Girl Scouts, Inc., 670 Lexington Ave., New York, N. Y.

Mineral Resources of Alaska—Report on Progress of Investigations in 1924: By Philip S. Smith and others—168 pages, 8 figures, has recently been published by the U. S. Geological Survey, Washington, D. C.. as Bulletin No. 783. Copies are obtainable on request.

The Stone Trades Journal—April, 1927, price 15c. A monthly magazine devoted chiefly to stone products such as marble, granite, slate, etc. Of special interest to quarrymen but collectors may also find the magazine of value. Address The Stone Trades Journal,, 36 Southampton St., Strand, W. C. 2, London, England.

The American Mineralogist—April, price 30c. This is the official organ of

the Mineralogical Society of America. This issue contains 90 pages with many fine illustrations and figures, while the articles are devoted exclusively to Contributions To Mineralogy, from the Department of Mineralogy and Petrography, Harvard University. Copies can be obtained on application to Prof. Alexander H. Phillips, Princeton University, Princeton, N. J.

The Mining and Quarry Industries of New York from 1919 *to* 1924, *Including Lists of Operators*—By C. A. Hartnagel, Assistant State Geologist, has just been issued as Bulletin No. 273. It consists of 102 pages and gives briefly an account of the useful mineral deposits of the State of New York, their locations. their character, and tables of production with lists of mine and quarry operators. Copies can be obtained on application to C. A. Hartnagel, Assistant State Geologist, New York State Museum, Albany, N. Y., presumably free as no price is quoted.

Geology of Territory Between Port Henry and Wright, with Notes on the Five Sites for a Proposed Bridge Across Lake Champlain: By C. A. Hartnagel, Assistant State Geologist, has just been issued as a small 4-page pamphlet. A sketch Map showing Geological Formations in the Lake Champlain Region between Port Henry and Wright, is included. Copies can be obtained, presumably free, on application to C. A. Hartnagel, Assistant State Geologist, New York State Museum, Albany, N. Y.

Thirty-Fifth Annual Report of the Ontario Department of Mines—1926, Part 5, 69 pages, 5 illustrations, 1 insert map, has just been published by the Ontario Department of Mines, Toronto, Canada. Copies are obtainable on request.

Monda Posta, January, 1927. This small, 8-page magazine is the official publication of the INTERNACIA LIGO, an International Exchange Club, Promoting Correspondence, Exchange of Postage Stamps, Post Cards, etc. One of the club's chief features is to promote and encourage the use of "Esperanto" as an international language. Copies of Monda Posta can be obtained on request from J. Harold Blackney, Pres. Internacia Ligo, Box 387, Saginaw, Mich.

ANNOUNCEMENT

We carry a complete line of blowpipe apparatus and reagents of the highest grade; also have standard minerals and ores for comparison, etc. A complete line of metallurgical apparatus and chemicals. Let us know your wants and we will quote THE LOWEST POSSIBLE RATES. Write for chemical list. Assuring you of quality, service (our **Lightning Service Dept.**), courtesy and low rates, we are

THE NATIONAL LABORATORIES
"Everything for the Chemist"
6322 10th AVENUE **BROOKLYN, N. Y.**

MONEY FOR YOU!

Am constantly buying for cash anything pertaining to old San Francisco, such as theatre playbills, pamphlets, invitations, bills of fare, newspapers and magazine files, sheet music, etc. Also runs of out-of-print dime and half-dime novels and libraries. No haggling, no delay. I pay spot cash. Kindly describe fully so I can buy your lots promptly.

JAMES MADISON
5150¼ Sunset Blvd. Hollywood, Calif.

STANDARD HARDNESS POINTS

Minerals of Moh's Scale mounted in pencil-sized holders for convenience in testing hardness.

GILBERT HART
P. O. Box 2005
Birmingham, Ala.

CHOICE LAKE SUPERIOR MINERALS

Native Silver Specimens.....50c-$10.00
Native Copper Specimens.....25c- 5.00
Iron Specimens 25c- 2.00
Prepaid upon receipt of price.

No exchanges.

GEO. E. SCHULZ, CALUMET, MICH.

INDIAN RELICS WANTED

Arrows, Spears, Drills, Axes, Beads, Banners, Boat Stones, Gorgets, Plummets, Pipes, Pottery, Spades, Hoes, etc. Give full description and price in first letter.

H. T. DANIEL
Box 306, Lamar, Arkansas

Classified Ad Section

Rate: 2c per word—3 insertions for the price of 2.

WANTED—BOOKS ON GEMS, DICHroscope, Gem Scale. The Gem Shop, Box R37, Wolf Creek, Mont.

GEMS AND MINERALS TO SELL AND exchange for Gem Minerals, Guns, Rifles and Binoculars. P. S. Dudley, Buckfield, Maine.

FERBERITE, ROSCOELITE, MANGAnite, Carnotite, Calcite-Sand Crystals, Fluorite, etc. Ten 2-inch specimens, $1.00. Harold McConnell, Boulder, Colorado.

FLUORITE AND OTHER MINERALS exchanged for minerals, arrow heads, etc. Byron Teagarden, 2205 Arapahoe Ave., Boulder, Colorado.

INDIAN CURIOS, STONE AGE SPECImens, Antique Guns, Pistols and Daggers from all parts of the world. Illustrated list, 10c. N. E. Carter, Elkhorn, Wisc.

FOSSILS FOR SALE. CRINOID STEMS (or Sea Lily Stems). Price 5c and 10c each. Postage extra. Frank Cooney, Jr., 359 S. 5th St., Gadsden, Ala.

STUDENTS' MICROSCOPE (COMpound) 3 objective lenses. Magnifies about 200 times. Will sell for $10 or exchange for minerals or books of equal value. M. D. Wand, P. O. Box 373, Ford City, Penn.

MOSS AGATES, OPALS, ALL KINDS of Gem Stones, Cabinet Specimens, Gem Material. Cutting, Mounting and Polishing. Wholesale, Retail, Mail Order, or will send in Memo to responsible parties. E. W. Birch, P. O. Box 34, Salem, Oregon.

WILL EXCHANGE CALC TUFA, ALSO a few beautiful Quartz, Chalcedony, Calcite center Geode specimens for Coral, Herkimer County crystals, or Stalactites. Write now today. Joseph N. Prokes, R. 5, Box 30, Jackson, Minnesota.

WHETSTONE FROM THE FAMOUS quarries of Grindstone City, Mich. Only 25c. Elliott's Wonderland, Findlay, Ohio.

EXCHANGE FOR MINERALS OR FOSsils: Butterfly Net, Spreading Board, two Schmitt Boxes, Butterflies, Indian Relics, Stamps. Benj. T. Diamond, 467 Riverdale Ave., Brooklyn, N. Y.

BOY SCOUT MINERAL CLUB OF Stamford, Conn., will exchange local minerals with other Scouts and Collectors. Boy Scout Mineral Club, 1 Bank St., Stamford, Conn.

YOUR ORES AND MINERAL SPECImens analyzed by an experienced chemist. Single element identification, $1; Complete analysis-Qualitative, $1 for each constituent; Quantitative, $3 for each element reported. Accurate, conscientious work. Address Chemist, care Rocks and Minerals, 157 Wells St., Peekskill, N. Y.

GENUINE AMBER AND ROCK CRYStal Necklaces, one yard long, direct importation at wholesale prices. Cut-stones in black and light Opals, blue and white Zircens, Amethyst, Oriental Topaz, Tourmaline, Chrysoberyl, Aquamarine, Star Sapphire—Minerals of Tiger Eye, Malachite, Californite, Turquoise, Tourmaline, Rhodonite, Chiastolite, Rubellite, etc. Write me your wants. Albert Everitt, Escondido, California.

WANTED: BOOKS ON AND HISTOries of Illinois, Indiana, Iowa and Missouri. Books on Gems and Precious Stones. Books pertaining to Abraham Lincoln, Benjamin Franklin and William Penn. Books by Mary Baker Eddy. Books on The Standard Oil Company. Books on the Indians, Indian Captivities, Exploration, Adventures, etc. Bulletins and Annual Reports of the Bureau of American Ethnology. Bound volumes of Peterson's Magazine and Gody's Lady Book. Christopher Look, 1432 S. Oak Ave., Freeport, Illinois.

Exchange Ads

Subscribers having minerals or other specimens to exchange, may insert notices on this page at a very reasonable rate. We hope this page may be the means of bringing our subscribers closer together and result in adding to their collections many desirable specimens. 25c will place your name on this list for 1 year. Figure on 10 words, including name and address, but give enough information when writing so it can be condensed and placed under proper heading. These columns are for exchanges only, and not for commercial exploitation.

The following will exchange with collectors all over the world and can offer:

Iron Ore Minerals

Oscar J. Korpi, P. O. Box 775, Soudan, Minn., U. S. A.